Respiratory system:

1. After how much time follow up chest XRAY should be done to check for resolution of consolidation in pneumonia?

A. 1 to 2 weeks
B. 2 to 4 weeks
C. 4 to 6 weeks
D. 4 months
E. 6 months

2, 4, 6, 8

Ans: 4 to 6 weeks

Explanation: A follow up chest x-ray should be done after 4 to 6 weeks of pneumonia. In young patients, consolidation mostly resolved within 4 weeks. Elderly patients may take 6 to 8 weeks for resolution. Causes of persistent consolidation includes:

- Pneumonia due to resistant organisms
- TB
- Pulmonary embolism
- Fungal pneumonia
- Cryptogenic organizing pneumonia
- Malignancy

2. Which one of the following biomarkers can be used to differentiate between bacterial and non-bacterial pneumonia?

A. CRP
B. Albumin
C. ESR
D. Procalcitonin
E. Anti-trypsin

Ans: Procalcitonin

Explanation: Serum procalcitonin is typically undetectable in healthy persons when standard assays are used. When systemic inflammation is caused by bacterial infection, procalcitonin synthesis is induced in nearly all tissues and released into the blood. It is not induced in viral infections. It has a good discriminatory value for distinguishing between viral and bacterial infections. In patients with CAP, procalcitonin has been used to reduce unnecessary antibiotics use if values are normal. All the other inflammatory markers are raised in both bacterial and non bacterial inflammation.

3. What should be the characteristics of a true sputum sample cells count result, which should be adequate for culture?

A. > 15 neutrophils + < 20 squamous cells
B. > 25 neutrophils + < 25 squamous cells
C. > 25 neutrophils + < 10 squamous cells

48 hours

D. > 20 neutrophils + < 15 squamous cells

E. All neutrophils and no squamous cells

Ans: > 25 neutrophils and less than 10 squamous cells

Explanation: It is very important that the sputum is the material coughed up from the lungs and not the saliva spit from the mouth or mucus from back of throat. Prior to culturing a sputum sample, a gram stain is performed to evaluate the quality of the specimen. Squamous epithelial cells and neutrophils are measured and specimens are graded as follow:

Squamous cell 0-10 with more than 25 neutrophils -> Good
Squamous cell 11-19 with > 25 neutrophils -> fair
Squamous cell > 19 with > 10 neutrophils -> poor
Squamous cell > 19 with < 10 neutrophils -> inadequate.
Poor and inadequate samples should not be cultured.

4. After 1 week of liver transplantation, patient developed pneumonia. Which one of the following organisms will be responsible?

A. Cytomegalovirus
B. Klebsiella
C. Aspergillus
D. P. Jirovecii
E. Paragonimus

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5

Ans: Klebsiella

Explanation: Pneumonia is one of the common cause of death in post operative period of liver transplant. Post liver transplant pneumonia cause varies with the timing of infection. In the early period (< 1 month) nosocomial pneumonia and ventilator associated pneumonia are the common causes which are caused by drug resistant Klebsiella 22%, pseudomonas 8% and acinetobacter 6%. During 1- 6 months, the opportunistic infections like CMV and PCP predominate as intensive immunosuppression persists. In the late period after 6 months, community acquired bacterial and viral pneumonia arise as immunosuppression is reduced

5. Which one of the following is not a bad prognostic factor for lung abscess?

A. Age > 60 years
B. Secondary lung abscess
C. Abscess size > 6 cm
D. Presence of anaerobic bacteria
E. Sepsis at presentation

>60
>20%
8q

>60 year.
AML
>20%

Ans: Presence of anaerobic bacteria

Explanation: Lung abscess is defined as necrosis of the pulmonary tissue and formation of cavities containing necrotic debris or fluid caused by microbial infection. The formation of multiple small (<2 cm) abscesses is occasionally referred to as necrotizing pneumonia. Primary abscesses are infectious in origin, caused by aspiration or pneumonia in the healthy host. Secondary abscesses are caused by a preexisting condition (e.g., obstruction), spread from an extra pulmonary site, bronchiectasis, and/or an immunocompromised state. Host factors associated with a poor prognosis include advanced age, debilitation, malnutrition, human immunodeficiency virus infection or other forms of immunosuppression, malignancy, and duration of symptoms greater than 8 weeks. The mortality rate for patients with underlying immunocompromised status or bronchial obstruction who develop lung abscess may be as high as 75%. Aerobic organisms, frequently hospital acquired, are associated with poor outcomes. Presence of sepsis at presentation and large abscess with size more than 5 cm is also a poor prognostic indicators.

6. An 18 year old boy presented with dry cough, malaise, low grade fever, earache and headache for 5 days. On examination there are scattered crackles on auscultation. CXR showed patchy infiltrates. Labs were done which showed HB 7.8, WBC 4000, Platelets 120000, Retics 9%. LDH was 1298. AST and ALT raised. A skin rash also developed with target lesions. What is the drug of choice for suspected organism?

A. Ceftriaxone
B. Penicillin G
C. Imipenem
D. Azithromycin ✓
E. Cefixime

mycoplasma pneumonia

Ans: Azithromycin

Explanation: This is a case of mycoplasma pneumonia complicated by hemolytic anemia and erythema multiform. Mycoplasma pneumonia infections remain one of the most common etiologies of community-acquired pneumonia. Mycoplasma pneumoniae pneumonia is often called "walking pneumonia" because of its presumed benign nature. The clinical presentation is non-specific and can be classified as pulmonary or extra pulmonary. Most commonly, patients present with fever, cough, myalgia and/or gastrointestinal symptoms. Mycoplasma does not have a cell wall, which makes the choice of antibiotics restricted to those that act on the bacterial ribosome to inhibit protein synthesis. These antibiotics include macrolides, ketolides, streptogramins and tetracyclines. Azithromycin remains the macrolide of choice, with better tolerance and a longer half-life than the others, which allows for a shorter course of treatment.

7. A 61 year old man undergoes preoperative evaluation before CABG and aortic valve replacement surgery. He has been hospitalized in the cardiac ICU for 4 days after collapsing and experiencing cardiogenic shock. He was intubated and being treated with both paralytic agents and sedating medications. Which one of the following is the most appropriate measure to prevent VAP in this patient?

A. Preoperative antibiotic prophylaxis
[✓ B. Maintain head of bead above 30 degree angle] ✓
C. Perform tracheostomy and remove ETT
D. Replace ETT with silver coated ETT
E. Vigorous suctions

Ans: Maintain head of bed above 30 degree

Explanation: Ventilator-associated pneumonia (VAP) is one of the most commonly encountered hospital-acquired infections in intensive care units and is associated with significant morbidity and high costs of care. interventions that have been shown to have a clinical impact include the following: (i) Non-invasive positive pressure ventilation for able patients, especially in immunocompromised patients, with acute exacerbation of chronic obstructive pulmonary disease or pulmonary edema, (ii) Sedation and weaning protocols for those patients who do require mechanical ventilation, (iii) Mechanical ventilation protocols including head of bed elevation above 30 degrees and oral care, and (iv) Removal of subglottic secretions. Other interventions, such as selective digestive tract decontamination, selective oropharyngeal decontamination and antimicrobial-coated endotracheal tubes have no strong evidence to recommend their use in clinical practice. The timing of tracheostomy is not associated with a significant reduction in short-term mortality, long-term mortality, the incidence of VAP, or other complications. Elevation of the head of the bed is attempted to reduce aspiration of gastric content. Clinical practice guidelines recommend keeping the head elevated above 30 degrees in order to prevent aspiration. Gentle subglottic suctioning reduce the incidence of VAP but vigorous suctioning causes injury to trachea and more risk of infection. Silver coated ETT is not cost effective and studies show no evidence of decrease infections.

8. A 35 year old diabetic female admitted with high grade fever with productive cough. She was managed with moxifloxacin for CAP. After 5 days of the initial therapy patient developed SOB for which CXR was done which showed pleural effusion. Diagnostic Tap was done which showed neutrophilic predominant exudative pleural effusion. PH was 7.1, LDH 1538 and glucose 37 mg/dl. What is the next best treatment?

2 5 7.1

A. Continue moxifloxacin
B. Therapeutic aspiration
C. Observe
D. Chest tube drainage ✓
E. Add Vancomycin to moxifloxacin.

Ans: Chest tube drainage

Explanation: A parapneumonic effusion refers to the accumulation of exudative pleural fluid associated with an ipsilateral lung infection, mainly pneumonia. Parapneumonic pleural effusions are classified into:

- Uncomplicated parapneumonic effusions, which are exudative, neutrophilic effusion. Gram stain and culture are negative, glucose level greater than 60 mg/dl, pH above 7.20 and LDH less than 1000. Treatment is antibiotics and observation.
- Complicated parapneumonic effusions, resulting from a bacterial introduction into the pleura. In this type of parapneumonic effusion, there is a decreased glucose level to less than 40, pleural fluid is below 7.20 and LDH more than 1000. Cultures of fluid from complicated parapneumonic effusions are negative and rapid bacterial clearance from the pleural space, or low bacterial count may explain this. The fluid termed as complicated because it necessitates drainage by chest tube for resolution. 7.1
- Empyema thoracis in which there is frank pus in the pleural space, or there is evidence of bacterial infection of the pleural fluid by Gram stain or a positive culture. Treatment is chest tube drainage if free flowing.

9. A 55 year old patient is diagnosed as having empyema thoracis. Chest tube inserted which shows thick pus not flowing freely. The next best management for this patient would be?

A. Continue chest tube drainage

B. Intrapleural streptokinase

C. Decortication

D. Rib resection and open drainage

E. Intensive antibiotics therapy

Ans: Decortication ✓

Explanation: Empyema thoracis is defined as frank pus in the pleural space, or evidence of bacterial infection of the pleural fluid by Gram stain or a positive culture. For empyema or loculated effusion in adults, a CT scan with intravenous contrast is helpful. Radiographic contrast enhances the visualization of the pleural surfaces and helps identify pleural fluid loculations. Empyema is suggested by the presence of a split pleura sign in which there is a thickening of the visceral and parietal pleura with significant separation of the pleural surfaces. There are different management strategies According to empyema characteristics:

mild
Decubitus
[illegible]
Continue

- Chest tube drainage: Chest tube drainage is generally preferred for patients with uninoculated effusions and free-flowing fluid.
- Fibrinolytic agents: The intrapleural administration for fibrinolytic agents for example, streptokinase aiming for facilitating the drainage of the loculated parapneumonic effusion is controversial.
- Video- assisted thoracoscopy (VAT): Thoracoscopy is an alternative therapy for loculated empyema when antibiotics and tube thoracostomy fail for the drainage. Thoracoscopy disrupts the intrapleural adhesions and allows the drainage of the pleural fluid.
- Decortication: Decortication is indicated when persistent pleural peel is formed, leading to significant pulmonary restriction and when VAT is delayed for more than 2 weeks.
- Rib resection and open drainage: A vertical incision through the chest wall with rib resection (1 to 3) is done to allow pleural fluid drainage. A chest tube is left in place (about 60 to 90 days). Open drainage of the pleural space may be considered when the previous methods fail, and when the patient is too ill to tolerate decortication.

In the above patient the best next step would be VAT with decortication. But VAT is not present in options so next best would be open decortication.

10. A 52 year old male with poorly controlled DM presented with low grade fever with productive cough and dull chest pain for 3 months. 1 week back, patient developed a swelling on the right side of chest wall which is fluctuant with foul smelling discharge. X-ray chest showed right sided pleural effusion. What is your diagnosis?

A. Infected lipoma

B. Osteomyelitis of ribs

C. Empyema necessitans ✓

D. Malignant mesothelioma

E. Broncho pleural fistula

Ans: Empyema necessitans

Explanation: Empyema necessitans refers to extension of a pleural infection out of the thorax and into the neighboring chest wall and surrounding soft tissues, e.g. extension of an empyema out of the pleural cavity. It is a rare complication of empyema and occurs in immunocompromised patients. TB is the most common cause of this. CT chest is used for its assessment. Management options include closed or open drainage of the pleural space to prevent fibrosis and to facilitate expansion of the lung. Appropriate antibiotic therapy is also a mainstay of treatment.

11. A 46 year old man is presented with high grade fever, chest pain and dyspnea. CXR was done which showed consolidation with air broncho grams with thin walled multiple cavities in right upper lobe. Which one of the following organism is less likely to present like this?

A. S. Aureus

B. Klebsiella ✓

C. Pseudomonas ✓

D. Mycoplasma ✓

E. Streptococcus type III ✓

Ans: Mycoplasma

Explanation: This is a case of necrotizing pneumonia. Necrotizing pneumonia is a rare and severe complication of bacterial community-acquired pneumonia (CAP). Necrotizing pneumonia is characterized by pulmonary inflammation with consolidation, peripheral necrosis and multiple small cavities. Common organisms causing NP are:

- Staphylococcus aureus
- Klebsiella pneumonia
- Nocardia
- Actinomyces
- Pseudomonas aeruginosa
- Pneumococcus type III species.

mycoplasma

12. A 75 year old patient admitted with CAP. Examination showed an ill looking gentleman with BP of 95/55 mmhg, HR of 115, temperature of 102 and RR of 32/min. Patient is well oriented in time, space and person. Labs showed leukocytosis with high CRP, Urea 9mmol/ L and normal creatinine. How will you treat this patient?

0-1 ② 3-5

CURB-65

0 ① ① ① ①

A. Oral antibiotics and send home

B. IV antibiotics and send home

C. Oral antibiotics and hospital admission

D. IV antibiotics and hospital admission

[✓ E. IV antibiotics and ICU admission]

Ans: IV antibiotics and ICU admission

Explanation: This patient has CURB-65 score of 4 which puts this patient as high severity CAP which have mortality ranging from 15-40%. These patients should be admitted urgently and ideally managed in ICU. Patients who have scores of 0-1 can be sent home on oral antibiotics, those with scores more than 1 but less than 3 should be admitted for short observation in hospital on oral or IV antibiotics depending upon patients other factors.

13. A patient with CAP develops herpes labialis. Which organism causing CAP is commonly associated with this clinical finding?

A. Legionella

B. A. Aureus

C. Pneumococcus

D. Mycoplasma

E. Pseudomonas

Ans: Pneumococcus

Explanation: Herpes labialis occurs in up to 45% in patients who have Pneumococcal pneumonia. This occurs due to reactivation of latent virus in the ganglion.

14. A 25 year old female presented with cough with rusty sputum and pleuritic chest pain. What may be the probable organism?

A. Pneumococcus B. Pseudomonas C. Heamophilus D. Klebsiella E. Mycoplasma

Ans: Pneumococcus

Explanation: Pneumococcus is classically associated with a cough productive of rust colored sputum. Pseudomonas and heamophilus are associated with green sputum. Klebsiella species cause red currant jelly sputum.

15. A 21 year old known case of epilepsy presented with a 3 week history of cough with greenish sputum with swinging pyrexia. Chest X-RAY done which showed a round shaped cavity with air fluid level in right middle zone. What should be the initial treatment of choice?

A. Ampicillin

B. Azithromycin

C. Clindamycin

D. Doxycycline

E. Levofloxacin

Ans: Clindamycin

Explanation: The diagnosis is lung abscess arises most probably as a complication of aspiration pneumonia by mouth anaerobes during epileptic attack. The most common anaerobes are peptostreptococcus, bacteroides, fusobacterium, and microaerophilic streptococcus. Patients with periodontal disease, epilepsy, alcohol abuse and dysphagia are at the highest risk. Standard treatment is Clindamycin 600mg IV q8h followed by 300 mg PO qid. Metronidazole if used should be paired with a beta lactam drug. Treatment should be given for 4-6 weeks to prevent the risk of relapse. Antibiotics can be extended until the chest x-ray has shown either resolution of abscess or the presence of small stable lesion.

16. A patient after a trip to turkey presented with complaints of fever with cough and diarrhea preceded by headache and myalgia for 2 days. Labs showed high CRP with low albumin and low sodium. What test should be used for diagnosis of organism?

A. Blood culture

B. Gram stain

C. Urinary antigen

D. Urine culture

Legionella

E. X-ray chest

Ans: Urinary antigen

Explanation: Pneumonia after a trip is most likely due to legionella. Its polysaccharide antigen is detected by ELISA and it is detectable in 80% of patients on day 1-3 of clinical illness. Blood culture sensitivity is very low. Urine culture is not recommended. Gram stain shows neutrophils with a paucity of organisms. Azithromycin for 14 to 21 days is the treatment of choice.

17. The most common organism in ventilated patients with late onset ventilated associated pneumonia is?

A. MRSA

B. MSSA

C. Heamophilus

[✓ D. Acinetobacter]

E. Pneumococcus

48-72hour

Ans: Acinetobacter

Explanation: Ventilator associated pneumonia is defined as pneumonia occurring more than 48–72 hours after endotracheal intubation and it is a common complication in subjects on mechanical ventilation. VAP is classified as early-onset or late-onset, in part, to identify subjects at risk for infection with resistant pathogens. Early-onset VAP (< 5 d of hospitalization) has been commonly associated with a better prognosis and bacteria that are more susceptible to antibiotic therapy. On the other hand, late-onset VAP presents ≥ 5 days from hospital admission, and is associated with higher morbidity, mortality, and MDR

6/6

pathogens. MRSA, MSSA and heamophilus with Pneumococcus are common in early onset VAP. The most organism with late onset VAP is acinetobacter and ESBL gram negative bacilli.

18. Which one of the following is a cause of typical bacterial pneumonia?

A. Mycoplasma pneumonia

B. Legionella pneumonia

C. Staphylococcus pneumonia

D. Chlamydia pneumonia

E. Pneumocystis pneumonia

Co am 5

Ans: Staphylococcus pneumonia

Explanation: Typical pneumonia generally begins with a sudden high fever and chills with respiratory symptoms more than the extra pulmonary symptoms. Organisms causing typical pneumonia are Pneumococcus, staphylococcus, pseudomonas, Klebsiella and other gram negative bacilli. Atypical pneumonia begins with non specific symptoms and extra pulmonary symptoms are more than the respiratory symptoms. Common organisms are Mycoplasma, legionella and Chlamydia.

19. A homeless alcoholic presents to you with cough, pleuritic chest pain and fever. XRAY chest showed right upper lobe consolidation. What organism should be considered in this patient?

A. E. Coli

B. MSSA

C. MRSA

D. Klebsiella

E. Pseudomonas

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Ans: Klebsiella

Explanation: Klebsiella is among the common gram negative bacilli causing CAP and HAP. The classic clinical presentation is sudden onset high fever with currant jelly sputum and cough. X-ray chest shows bulging fissure and necrotizing pneumonia commonly involving upper lobes. CAP caused by klebsiella commonly involves diabetics and alcoholic and should be considered as a cause in these patients. The most common cause of CAP in alcoholics is pneumococcus but klebsiella should be considered in these patients because mostly strains are drug resistant.

20. A 35 year old lady presented with progressive shortness of breath with dry cough and fever for 1 week. She has rhinorrhea 5 days before this presentation. Examination showed distressed lady due to SOB with 80% saturation on room air. X-ray done which showed non-specific reticulonodular shadowing with ground glass opacities. CBC showed high lymphocyte count. What organisms may be the cause of this presentation?

A. Pneumococcus B. Staphylococcus C. Influenza virus D. Pneumocystis E. Paragonimus

Ans: Influenza virus

Explanation: This is a typical case of viral pneumonia. Typical bacterial pneumonia presents with acute onset with high temperature and single lung positive findings. If there is insidious onset, low temperature, tachycardia or tachypnea out of proportion to the temperature, normal physical findings on auscultation with bilateral lung findings on x-ray, think about atypical pneumonia or viral pneumonia. Viral pneumonia is preceded with history of flu like illness like rhinorrhea, myalgias and nasal congestion. CBC typically shows high fraction of lymphocytes. X-ray shows patchy areas of consolidation to extensive airspace disease with ground glass opacities.

21. A 30 year old lady who is diagnosed as having severe uncontrolled asthma by her GP presented with sudden onset of dyspnea unresponsive to bronchodilators and steroids. She tells you that she can't take enough air inside. Flow volume loop showed inspiratory loop flattening with abrupt drop and rise in the expiratory flow. Spirometry is normal. What is your diagnosis?

A. Brittle asthma

B. Foreign body inhalation

C. Vocal cords dysfunction

D. Psychogenic

E. Anaphylaxis

Ans: Vocal cords dysfunction

Explanation: Vocal cord dysfunction (VCD), also commonly known as paradoxical vocal fold motion, can be characterized as an abnormal adduction of the vocal cords during the respiratory cycle (especially during the inspiratory phase) that produces airflow obstruction at the level of the larynx. The underlying pathophysiology of VCD involves a hyper functional and inappropriate laryngeal closure reflex. VCD frequently mimics persistent asthma and is often treated with high-dose inhaled or systemic corticosteroids, bronchodilators, multiple emergency department visits and hospitalizations. Flow-volume loops obtained during symptomatic periods of wheezing show a limitation of inspiratory flow suggestive of variable extrathoracic obstruction (inspiratory loop flattening). Paradoxical vocal cord motion can be confirmed on laryngoscopy performed when patients are symptomatic. Another clinical clue may be that patients with VCD often seem to have refractory asthma with poor response to beta-agonists or inhaled corticosteroids. The hallmark of diagnosis is noted on direct rhinolaryngoscopy; a glottic chink is present along the posterior portion of the vocal cords, while the anterior portion of the vocal cords is adducted.

22. A 39 year old obese female has influenza A infection 1 week back has developed worsening of cough with shortness of breath. CXR showed lobar pneumonia. Which organism is responsible for pneumonia in this patient?

A. Pneumococcus

B. Heamophilus

C. Staphylococcus

D. Pseudomonas

E. Mycoplasma

Ans: Staphylococcus

Explanation: Secondary bacterial pneumonia follows acute influenza. Improvement of the patient condition over 3-4 days is followed by a reappearance of fever along with clinical signs and symptoms of bacterial pneumonia including cough with sputum and physical and radiological signs of consolidation. The most common bacteria is S. Aureus followed by pneumococcus and heamophilus.

23. The treatment of choice for psittacosis is? Doxycycline

A. Levofloxacin B. Tetracycline C. Amoxicillin D. Trimethoprim E. Cefixime

Ans: Tetracycline

Explanation: Antibiotic of choice for psittacosis is tetracycline 250 mg four times a day for 3 weeks. Macrolide are used if allergic to tetracycline. Gold standard test for diagnosis is the micro immunofluorescence (MIF) test for the measurement of immunoglobulin G (IgG) and IgM antibodies.

24. A 55 year old gentleman was admitted in emergency with acute pulmonary edema with cardiogenic shock. He was shifted to ICU for management. After 1 week of hospital admission, patient has developed high grade fever with purulent sputum. CXR was done which showed worsening of preexisting infiltrates. Patient also has history of UTI 2 weeks before this admission for which he was treated with levofloxacin and Cefixime. What empirical antibiotic therapy you will start?

5 co

5 MRSA

A. Ceftriaxone plus levofloxacin
B. Levofloxacin plus linezolid
C. Ampicillin/ salbactum plus moxifloxacin
D. Meropenem
E. Meropenem plus levofloxacin plus linezolid

Ans: Meropenem plus levofloxacin plus linezolid

Explanation: This patient has developed late onset health care associated Pneumonia. The empirical therapy for this patient should contains antibiotics for pseudomonas and MRSA as this patient is at high risk of developing MDR pathogens. Recent antibiotics use in the last 3 months is a strong risk factor for developing MDR pathogens. The standard recommendation for patients with risk factors for MDR infection is for three antibiotics; two directed against pseudomonas and one at MRSA. The best therapy for pseudomonas coverage is one anti pseudomonal beta lactam preferably pip- Taz or carbapenem plus one from aminoglycoside or quinolone. For MRSA vancomycin or linezolid should be given.

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25. A 32 year old man was intubated for GBS is now extubated 2 days back. He developed stridor and shortness of breath. Voice is normal with no hoarseness. What will be your next best management?

A. [illegible] view
B. Indirect laryngoscopy

C. CT Neck and chest

D. Fibro optic bronchoscopy

E. CXR PA view

Ans: Fibro optic bronchoscopy

Explanation: Tracheal stenosis following prolonged intubation is a relatively rare but a serious problem. When the cuff pressure exceeds the mucosal capillary pressure (30 mm of Hg) of the trachea, the mucosa that lies between the cuff of the balloon and the underlying cartilages develops ischemia. Long standing ischemia can leads to ulceration and chondritis of tracheal cartilages, followed by fibrotic healing, leading to progressive tracheal stenosis. These patients may remain asymptomatic for a variable period and then develop difficulty in expectoration and dyspnea on exertion and can progress to airway obstruction with the development of a stridor. Post intubation tracheal stenosis is often misdiagnosed as asthma. Bronchoscopy is the mainstay of diagnosis and it also rules out other diseases i.e. vocal cord palsy, tracheomalacia. The various options for treating tracheal stenosis are dilation, laser resection, stenting, and resection anastomosis.

26. A 16 year old boy presented with a 30 hours history of pyrexia, myalgia and coryza in the month of September. His relatives inform you that other members of family have similar problems. You suspect influenza infection. Which of the following drugs should you also consider adding?

A. Antibiotics for pneumonia

B. Zanamivir

C. Oseltamivir

D. Ribavarin

E. Salbutamol nebulization

Ans: Oseltamivir

Explanation: Oseltamivir is the 1st line treatment recommended for patients with suspected or confirmed influenza. Zanamivir is useful in patients with poor swallowing or in those with suspected or confirmed Oseltamivir resistant influenza. There is no role of prophylactic antibiotics.

27. A 45 year old male on chemotherapy for non Hodgkin's lymphoma presents with progressive cough with fever not responding to broad spectrum antibiotics. CXR done which showed cavitating lesion in the right upper lobe. CT chest done which showed cavitating lesion with halo sign. What is the most likely diagnosis?

A. Invasive aspergillosis

B. ABPA

C. Aspergilloma

D. Tuberculous

E. Klebsiella Pneumonia

Ans: Invasive aspergillosis

Explanation: This patient is likely to have had prolonged period of neutropenia after chemotherapy that has left him at risk of developing fungal infection. They should be part of DDs of new onset of fever with abnormal chest x-ray in immunocompromised patients. Invasive aspergillosis presents with fever and cavitating lesion in x-ray with a typical halo sign on CT chest. Aspergillus hyphae are hyaline, narrow and septate with branching at 45 are seen in BAL induced sputum on silver staining. Voriconazole is the preferred treatment for 3 months. It should be given intravenously before oral dosing because oral dosing takes at least 10 days to get to therapeutic level.

28. A 47 year old gentleman admitted with hemoptysis for the last one week. Patient has history of PTB for which patient took 6 months course of ATT with cure. CXR was done which showed a thick wall cavity in left upper zone with a solid mass in cavity with a halo of air around the mass. What is your diagnosis?

A. Reactivation of PTB

B. Post TB bronchiectasis

C. Aspergilloma ✓

D. Lung cancer

E. Wegner granulomatosis.

Ans: Aspergilloma

Explanation: Aspergilloma are mass-like fungus balls that are typically composed of Aspergillus fumigatus and are a non-invasive form of pulmonary aspergillosis. Aspergillomas occur in patients with normal immunity but structurally abnormal lungs, with pre-existing cavities. Common underlying conditions are:

- pulmonary tuberculosis: most common
- pulmonary sarcoidosis
- bronchiectasis from any cause
- other pulmonary cavities;
- bronchogenic cyst
- pulmonary sequestration
- PJP associated pneumatocoeles.

Most Aspergillomas are asymptomatic. Occasionally due to surrounding reactive vascular granulation tissue, hemoptysis may be present. Occasionally, erosion into a bronchial artery may lead to life-threatening hemoptysis. Aspergillomas typically occur in the cavities of post-primary pulmonary tuberculosis. Therefore, they are most frequently found in the posterior segments of the upper lobes and the superior segments of the lower lobes. Aspergillomas typically appear as rounded or ovoid soft-tissue attenuating masses located in a surrounding cavity and outlined by a crescent of air on chest x-ray. Altering the position of the patient usually demonstrates that the mass is mobile, thus confirming the diagnosis. In the setting of brisk hemoptysis, angiography may be performed on an emergency basis and selective bronchial artery embolization can be life-saving. Failing this, or in cases of repeated hemoptysis, surgical excision with a lobectomy remains the gold standard. Asymptomatic patients need no treatment.

29. A 35 year old patient presents with shortness of breath. EXAMINATION OF CHEST showed decrease right sided movement with dull percussion note and decrease breath sound with bronchial breath sounds on right side. Vocal resonance is decreased and apex beat is also shifted towards left. What is your clinical diagnosis?

A. Right lower lobe collapse

B. Right lower lobe consolidation

C. Pleural effusion

D. Pneumothorax

E. Right upper lobe collapse

Ans: Pleural effusion

Explanation: The clinical findings in plural effusions are decreased chest moments on affected side with dull to stony percussion note with decrease breath sounds on affected side with bronchial breath sounds at the upper level of pleural effusion due to collapse and decreased vocal resonance. Trachea and apex beat shift to opposite side. In consolidation vocal resonance is increased. Pneumothorax causes hyperresonant percussion note. In case of lung collapse, apex beat and trachea shifts towards the lesion.

30. A patient is diagnosed as having pleural effusion. Which one of the following features suggest the effusion as exudative?

A. Symmetrical bilateral effusion

B. Non loculated effusion

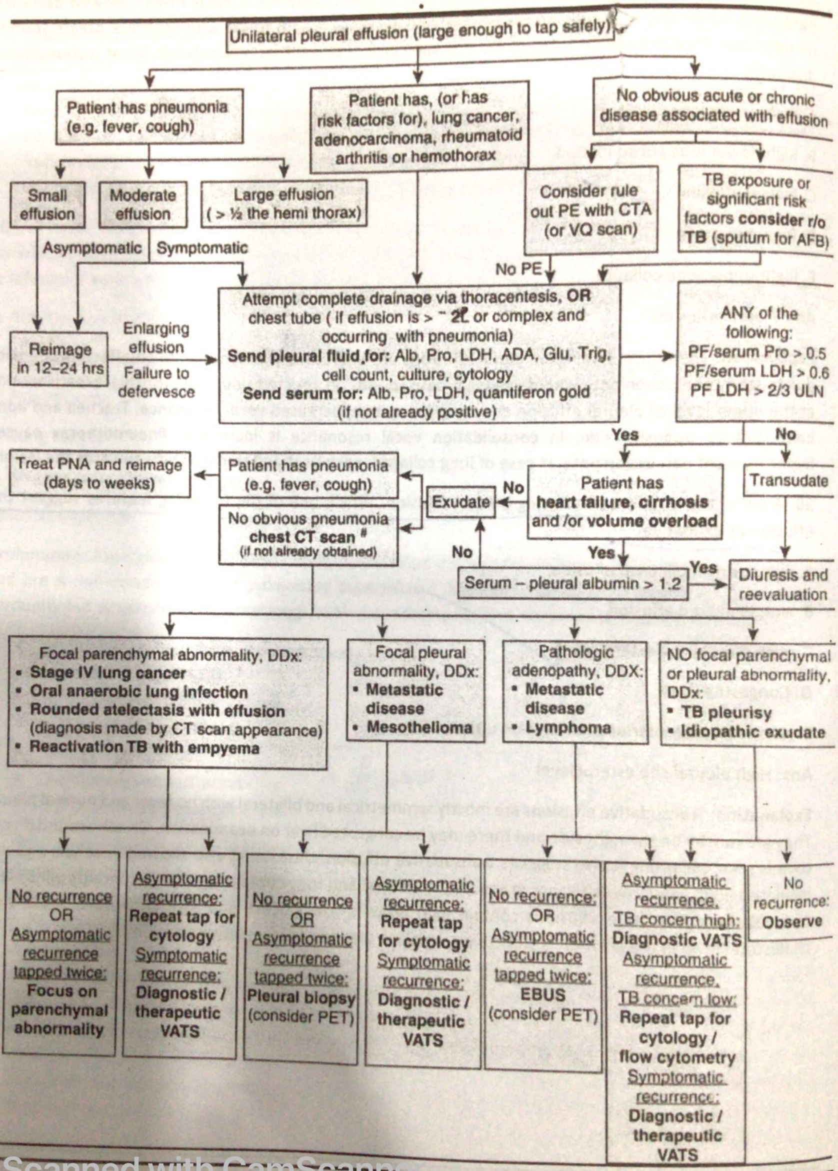
C. High pleural cholesterol level

D. Congested liver

E. Non collapsing inferior vena cava on ultrasound

Ans: High pleural cholesterol level

Explanation: Transudative effusions are mostly symmetrical and bilateral with no fever and normal pleura. They are mostly on the right side and there may be congested liver on examination. On ultrasound if vena cava is non- collapsing it also suggests transudative effusion. Ultrasound also showed anechoic and non loculated fluid. Exudative effusions are mostly unilateral and they contain high fibrin contents which lead to loculations. Exudative effusions contain high protein, low glucose and high cholesterol level. High cholesterol level in the effusion is sufficient to make a diagnosis of exudative effusion.


Unilateral pleural effusion (large enough to tap safely)
Patient has pneumonia (e.g. fever, cough)
Patient has, (or has risk factors for), lung cancer, adenocarcinoma, rheumatoid arthritis or hemothorax
No obvious acute or chronic disease associated with effusion
Small effusion
Moderate effusion
Large effusion (> ½ the hemi thorax)
Consider rule out PE with CTA (or VQ scan)
TB exposure or significant risk factors consider r/o TB (sputum for AFB)
Asymptomatic
Symptomatic
No PE
Reimage in 12–24 hrs
Enlarging effusion
Failure to defervesce
Attempt complete drainage via thoracentesis, OR chest tube (if effusion is > ~ 2L or complex and occurring with pneumonia)
Send pleural fluid for: Alb, Pro, LDH, ADA, Glu, Trig, cell count, culture, cytology
Send serum for: Alb, Pro, LDH, quantiferon gold (if not already positive)
ANY of the following:
PF/serum Pro > 0.5
PF/serum LDH > 0.6
PF LDH > 2/3 ULN
Yes
No
Treat PNA and reimage (days to weeks)
Patient has pneumonia (e.g. fever, cough)
No obvious pneumonia chest CT scan # (if not already obtained)
Exudate
No
Patient has heart failure, cirrhosis and /or volume overload
Transudate
No
Yes
Serum – pleural albumin > 1.2
Yes
Diuresis and reevaluation
Focal parenchymal abnormality, DDx:
• Stage IV lung cancer
• Oral anaerobic lung infection
• Rounded atelectasis with effusion (diagnosis made by CT scan appearance)
• Reactivation TB with empyema
Focal pleural abnormality, DDx:
• Metastatic disease
• Mesothelioma
Pathologic adenopathy, DDX:
• Metastatic disease
• Lymphoma
NO focal parenchymal or pleural abnormality, DDx:
• TB pleurisy
• Idiopathic exudate
No recurrence OR Asymptomatic recurrence tapped twice: Focus on parenchymal abnormality
Asymptomatic recurrence: Repeat tap for cytology Symptomatic recurrence: Diagnostic / therapeutic VATS
No recurrence OR Asymptomatic recurrence tapped twice: Pleural biopsy (consider PET)
Asymptomatic recurrence: Repeat tap for cytology Symptomatic recurrence: Diagnostic / therapeutic VATS
No recurrence: OR Asymptomatic recurrence tapped twice: EBUS (consider PET)
Asymptomatic recurrence, TB concern high: Diagnostic VATS Asymptomatic recurrence, TB concern low: Repeat tap for cytology / flow cytometry Symptomatic recurrence: Diagnostic / therapeutic VATS
No recurrence: Observe

31. Which one of the following is less likely to be the cause of massive Pleural effusion causing complete white-out of the hemithorax?

A. Hepatic hydrothorax

B. Malignant pleural effusion staph

C. Heart failure ✓

D. Chylothorax

E. Tuberculous effusion

Ans: Heart failure

Explanation: Transudative effusions are usually mild to moderate and less likely cause massive effusion except hepatic hydrothorax. Common causes of massive pleural effusion are:

- Malignant and Para malignant effusions
- Tuberculous effusion
- Chylothorax and hemothorax
- Lymphoma
- Empyema

liver HepatoRenal

32. Which one of the pleural fluid parameters helps in the decision of chest tube drainage in parapneumonic effusion?

A. Protein B. Cholesterol C. LDH D. pH E. Cell count

Ans: pH

Explanation: Measurement of pleural fluid pH has diagnostic, therapeutic, and prognostic implications in exudative pleural effusions. A parapneumonic effusion with a pleural fluid pH below 7.2 indicates an empyema is forming which necessitates chest tube drainage in all patients, whereas a pleural fluid pH over 7.3 does not require drainage. If the pH of a parapneumonic effusion is 7.2 to 7.3, serial pleural fluid pH measurements with clinical observation will help to determine the need for chest tube drainage. All other parameters are used in differentiating exudative from transudative effusions.

33. Pleural fluid report of the patient shows LDH of 95, protein 1.8, pH 7.42 with all lymphocytes. Serum LDH is 350 and serum total proteins are 6.7. What is the cause of the effusion?

A. Tuberculous

B. Systemic lupus erythematosus 7.3 1.7 6.7

C. Rheumatoid arthritis

D. Pulmonary infarction

E. Cirrhosis

Ans: Cirrhosis

Explanation: Transudative and exudative plural effusions are distinguished by measuring the LDH and protein levels in the pleural fluid. Exudative plural effusion meet at least one of the following criteria, whereas transudative pleural effusions meet none.

- Plural fluid protein/ serum protein>0.5
- Plural fluid LDH/ serum LDH>0.6
- Pleural fluid LDH more than two thirds the normal upper limit for serum.

In this patient, according to this criteria, the effusion is transudative. Common causes of transudative effusions are:

- LVF
- Cirrhosis
- Nephrotic syndrome
- Peritoneal dialysis
- Myxedema
- Urinothorax.

3H

34. Which one of the following cause of pleural effusion commonly presents with acute dyspnea?

A. Tuberculosis

B. Simple parapneumonic effusion

C. Malignant effusion

D. Drug induced effusion

E. Rheumatoid arthritis

Ans: Malignant effusion

Explanation: Malignant plural effusions secondary to metastatic disease are the second most common type of exudative plural effusion. The three tumors that cause 75% of all malignant pleural effusions are lung carcinoma, breast carcinoma and lymphoma. Patients present with acute dyspnea which is frequently out of proportion to the size of the fusion. Any process which leads to sudden accumulation of fluid leads to dyspnea where as chronic process does not cause sudden dyspnea.

35. A patient is diagnosed as having left sided pleural effusion on X-ray. Thoracentesis was done and pleural fluid is sent for examination which showed lymphocytic predominant exudative plural effusion. Other parameters showed glucose of 5mg with 145 mg glucose on serum sample. PH is 7.35. What is the most likely diagnosis?

7.2 7.1

A. Tuberculosis

B. Rheumatoid arthritis

C. Empyema

D. Malignancy

E. Cirrhosis

Ans: Rheumatoid arthritis

Explanation: The most probable diagnosis here is rheumatoid arthritis. Very low glucose level occurs in two conditions. Empyema and rheumatoid arthritis. In Empyema, the effusion is neutrophilic predominant with pH usually less than 7.2. In RA associated effusion, effusion is lymphocytic predominant with very low glucose and pH 7.3 to 7.4. Pleural involvement is a common pulmonary manifestation of rheumatoid arthritis, with small pleural effusions commonly present. Most effusions are unilateral and left sided, although occasionally bilateral effusions are found. Fever and pleuritic chest pain are common, but cough is generally absent unless there is comorbid parenchymal lung disease. Fluid glucose levels may be similar to serum glucose levels in acute disease, but typically fall quite low in chronic effusions. It is speculated that this may be due to pleural thickening reducing the ability of glucose to cross into the pleural space, or due to consumption from inflamed pleura. Rheumatoid factor is often present in pleural fluid, and may be higher than serum levels.

36. Which one of the following antibiotics can cause pleural effusion?

A. Doxycycline

B. Azithromycin

C. Fosfomycin

D. Nitrofurantoin

E. Ciprofloxacin

Ans: Nitrofurantoin ✓

Explanation: Nitrofurantoin has been documented as a cause of acute, sub-acute, and chronic pulmonary injury. It is commonly used in the treatment of uncomplicated UTI. It is a rare cause of pleural effusion. Antibiotics which can cause pleural effusions are, nitrofurantoin and daptomycin. Drug induced effusion is commonly associated with fluid eosinophilia.

37. A patient is diagnosed as having left sided pleural effusion. Examination of the fluid shows a transudative effusion with a pH of 6.4 and a glucose level of 25. What can be the possible cause?

A. Congestive heart failure

B. Cirrhosis

C. Nephrotic syndrome

D. Urinothorax ✓

E. Myxedema

Ans: Urinothorax

Explanation: Normally, transudative effusions have normal pH of more than 7.4 with normal glucose. The only cause of transudative effusion with low pH and low glucose is due to Urinothorax. Urinothorax is the accumulation of urine in the pleural space, is a very rare cause of pleural effusion, as a result of a trauma or blockage of the urinary tract. It ascends directly through anatomical defects of the diaphragm, but it seems more likely that the collection of urine migrates into the pleural space through diaphragmatic lymphatics due to increased retroperitoneal or intraperitoneal pressure caused by urinoma. It occurs mostly with obstructive uropathy.

38. A 55 year old female presented in emergency with sudden onset of shortness of breath. Chest X-ray was done which showed moderate left sided pleural effusion. Pleural fluid examination revealed lymphocytic predominant exudative effusion. Plural fluid is sent for cytological examination as there is high chance of malignancy. The cytology report is negative. What should be the next best step?

A. Repeat cytology

B. Thoracoscopy

C. Closed pleural biopsy

D. CT chest

E. Check all tumor markers

Ans: Repeat cytology

Explanation: Malignant and para malignant effusions are common cause of exudative plural effusion. Malignant effusion contains malignant cells on cytology. The term para malignant refers to an effusion in a patient with cancer when repeated attempts to identify tumor cells in the pleura or pleural fluid are non diagnostic but when there is a presumptive relation to the underline malignancy. Pleural fluid specimens should be sent for cytological examination in all cases of exudative effusion in patients suspected of having an underlying malignancy. Negative examination in a patient with a prior probability of malignancy should be followed by a repeat thoracentesis and cytology. If that examination is negative, thoracoscopy is preferred to closed plural biopsy.

39. A 40 year old female presented in emergency with SOB and chest pain. X-ray showed right sided pleural effusion. Examination showed hemorrhagic effusion with contains protein of 4.5 with 15 % eosinophils and markedly increased number of mesothelial cells. What is the probable diagnosis?

A. Tuberculosis

B. Pulmonary infarction

C. Malignant mesothelioma

D. Drug induced effusion

E. Pleural paragonimiasis

Right sided

hem. trauma -

T.B

Ans: Pulmonary infarction

Explanation: Pleural fluid eosinophilia (PFE), with eosinophil values greater than 10% of nucleated cells, is seen in approximately 10% of pleural effusions and is not correlated with peripheral blood eosinophilia. PFE is most often caused by air or blood in the pleural space. Blood in the pleural space causing PFE may be the result of pulmonary embolism with infarction or benign asbestos pleural effusion. PFE may be associated with other nonmalignant diseases, including parasitic disease (especially paragonimiasis), fungal infection (coccidioidomycosis, cryptococcosis, histoplasmosis), and a variety of medications. The presence of PFE mostly exclude a malignant effusion. The presence of PFE makes tuberculous pleurisy unlikely and also makes the progression of a parapneumonic effusion to an empyema unlikely. Mesothelial cells are found in variable numbers in most effusions, but their presence at greater than 5% of total nucleated cells makes a diagnosis of TB less likely. Markedly increased numbers of mesothelial cells, especially in bloody or eosinophilic effusions, suggests pulmonary embolism as the cause of effusion.

40. A patient with pleural effusion is suspected to be due to tuberculosis. Which of the following has the highest diagnostic sensitivity for tuberculosis?

A. Acid fast stain of pleural fluid

B. Culture of fluid

C. Culture and histology of pleural biopsy

D. Pleural fluid ADA level

E. Pleural fluid genXpert

Ans: Culture and histology of pleural biopsy

Explanation: Because most tuberculous pleural effusions probably result from a hypersensitivity reaction to the Mycobacterium rather than from microbial invasion of the pleura, acid-fast bacillus stains of pleural fluid are rarely diagnostic (< 10% of cases). Pleural fluid cultures grow M tuberculosis in less than 65% of cases. The combination of histology and culture of pleural tissue obtained by pleural biopsy increases the diagnostic yield for TB to 90%. Adenosine deaminase (ADA) activity of greater than 43 U/mL in pleural fluid supports the diagnosis of tuberculous pleuritis. However, the test has a sensitivity of only 78%. Pleural fluid genXpert has sensitivity of only 45% with high specificity.

41. A patient is diagnosed as having Pleural effusion on X-ray. Examination of pleural fluid shows turbid to milky in appearance and exudative effusion. Further examination showed cholesterol level of 40, with triglycerides of 250 and presence of chylomicrons. What is the diagnosis?

A. Empyema

B. RA associated effusion

C. Tuberculosis

D. Chylothorax

E. SLE associated effusion

Ans: Chylothorax

Explanation: Chylous effusions are uncommon cause of an exudative effusion. They are described as turbid or milky. They are frequently cellular and are rich in triglycerides, with a normal cholesterol level. Chylomicrons can be identified if a smear is stained for neutral fat. Causes are usually due to transection by trauma or surgery or obstruction of the thoracic duct by a malignancy, often lymphoma. There is another group of cloudy to opalescent effusions that are important to recognise as they have very different origins and clinical significance. They are called pseudochylous effusions and are mostly post-inflammatory. They are rich in cholesterol with low triglyceride content and no chylomicrons. These effusions are not of primary lymphatic origin but arise from breakdown products of any chronic effusion. Causes are TB, RA, SLE and empyema. A pleural fluid-to-serum cholesterol ratio of >1 is diagnostic of pseudochylous effusions and differentiates it from a similarly appearing Chylothorax. Low output (less than 100 ml/ day) Chylous effusion is treated conservatively with a low fat diet. High output is usually treated with open or video-assisted ligation. Octreotide can be given in postoperative leak following thoracic duct injury.

42. A patient is suspected of having pleural effusion on clinical examination. Which of the following imaging modality should be used next to confirm pleural effusion with high sensitivity?

A. X-ray PA view

B. X-ray lateral view 6.5

C. Ultrasound ✓

D. CT chest

E. MRI chest

Ans: Ultrasound

Explanation: Both PA and lateral view films are insensitive to small amount of effusions. On routine X-ray as much as 250 ml fluid is required before it becomes evident. Ultrasound allows the detection of small amounts of pleural locular fluid, with positive identification of amounts as small as 3-5 mL that cannot be identified by radiographs. Contrary to the radiological method, ultrasound allows an easy differentiation of loculated pleural fluid and thickened pleura. Moreover, it is effective in guiding thoracentesis even in small fluid collections. USG is superior to physical examination and x-ray in the detection and characterization of effusions. On x-ray we cannot differentiate between an elevated diaphragm, herniation, pleural thickening and subpleural fats. CT scan has better sensitivity but it is costly, risk of ionizing radiation is high and non availability all the time make it a poor first line choice. Also USG findings of fluid can differentiate between transudative and exudative effusion. CT can't differentiate between these two. MRI is rarely used for diagnosis of pleural effusion.

43. Which of the following statement is incorrect regarding primary pneumothorax?

A. Sub pleural blebs are the cause

B. Smoking increase the risk

C. Taller people at more risk

D. Physical exertion increased the risk ✓

E. High risk of recurrence

Ans: Physical exertion increased the risk.

Explanation: there is no evidence that a relationship exists between the onset of pneumothorax and physical exertion, the onset as likely to occur during sedentary activity. Subpleural blebs and bulla are found at the lung apices in up to 90% of cases of primary spontaneous pneumothorax. Smoking has been implicated in the etiological pathway. It increases the risk by 12%. Patients with primary spontaneous pneumothorax tend to be taller than control patients. The gradient of negative plural pressure increases from the lung base to the apex so that alveoli at the long apex in tall individuals are subject to significantly greater distending pressure than those at the base of the lung, predisposing to the development of apical subpleural blebs. The risk of recurrence of PSP is as high as 54% within the 1st 4 years.

44. A 22 year old tall young male presents to you with pleuritic chest pain. He has neither productive cough nor has SOB. There is no significant past medical and surgical history. CXR was done which showed a right sided pneumothorax with 1.5 cm rim of air with no mediastinal shift. He was vitally stable. What will be your best next step in management of this patient?

primary

<1-2cm

- A. Discharge with review after 2 weeks
- B. Therapeutic Aspiration
- C. Admit for observation
- D. Chest tube drainage
- E. Video assisted thoracoscopy

Ans: Discharge with review after 2 weeks

Explanation: Four factors are commonly used to decide the treatment of pneumothorax:

- ***Primary*** vs ***secondary***: Primary pneumothorax occurs in patients with no evidence of underlying lung disease. Secondary occurs in patients with overt underlying lung disease. Patients with secondary pneumothorax tolerate symptoms less and symptoms are out of proportion to the size.
- ***Presence of symptoms***: Breathlessness indicates the need for active intervention as well as supportive treatment.
- ***Size of pneumothorax***: The size of pneumothorax determines the rate of resolution and is a relative indication for active intervention. In defining a management strategy, the size of a pneumothorax is less important than the degree of clinical compromise. The differentiation of a large from a small pneumothorax is the presence of a visible rim of more than 2 cm between the lung margin and the chest wall at the level of the hilum.
- ***Age***: Age> 50 has shown a reduced success rate for aspiration.

As patient is young, having no shortness of breath with small pleural pneumothorax, observation is the treatment of choice. Aspiration is used in large primary pneumothorax. Chest drain is used when aspiration failed and symptoms not improved. For small pneumothorax, admission is required in secondary pneumothorax.

45. A 60 year old chronic smoker with 20 pack year history of smoking presents with sudden onset of SOB and right sided severe chest pain. CXR showed right sided pneumothorax with a rim of 2.5 cm. Next best management?

A. Admit and Observe

B. Oxygen therapy and observe

C. Chest tube drainage

D. Needle aspiration

E. Discharge with follow up in OPD after 1 week

Ans: Chest tube drainage

Explanation: This is a case of secondary symptomatic large pneumothorax. The best treatment for this patient is small bore chest tube drainage. Aspiration is less likely to be successful in SSP but can be considered for small pneumothorax. All patients with SSP should be admitted to hospital for at least 24 hours and receive supplemental oxygen.

46. A lorry driver with history of smoking has developed pneumothorax which was managed with chest drain. After how much time, he can resume driving?

A. 4 weeks

B. 6 weeks

C. 8 weeks

[✓ D. Stop driving permanently]

E. After 6 months

Ans: Stop driving permanently

Explanation: After a pneumothorax, driving should be stopped permanently unless secure definitive prevention strategy like bilateral surgical pleurectomy has been done with a normal CT chest post operatively.

47. A known case of COPD presented in emergency with sudden onset of shortness of breath with chest pain, examination showed RR of 35/min, PR of 125 with low blood pressure. Chest examination showed tracheal deviation to left with hyperresonant percussion note. What should be the next immediate management?

A. Oxygen therapy

[✓ B. Needle decompression]

C. Chest tube drainage

D. Mechanical ventilation

E. CPAP therapy

Ans: Needle decompression

Explanation: This is a case of tension pneumothorax. Immediate treatment is with emergency needle decompression usually with a cannula being introduced in the second anterior intercostal space in the midclavicular line. Oxygen should also be given. Chest drain is the definitive treatment. Mechanical ventilation and CPAP will worsen the tension and should be avoided.

48. A 68 year-old male with history of COPD is brought to the emergency department following a motor vehicle collision. On physical examination there is evidence of head trauma. The left side of the chest wall appears to move inward with inspiration and outward with expiration. A chest x-ray reveals multiple rib fractures on the left. Which of the following is the most appropriate intervention?

A. Surgical fixation of the fractured ribs

B. Application of elastic binders and adhesive tape

C. mechanical ventilation

D. Chest physiotherapy

E. Pain relief and oxygen therapy

Ans: Mechanical ventilation

Explanation: Flail chest is a life-threatening medical condition that occurs when a segment of the rib cage breaks under extreme stress and becomes detached from the rest of the chest wall. It occurs when multiple adjacent ribs are broken in multiple places, separating a segment, so a part of the chest wall moves independently. Indications for early endotracheal intubation and mechanical ventilation in treatment of flail chest include patients that are over the age of 65, have comorbid lung disease and associated severe head trauma. Other indications include shock, three or more associated injuries and fracture of eight or more ribs. Surgical fixation of flail chest is less reliable than positive-pressure ventilation and is performed only rarely. While application of elastic binders and adhesive tape was historically utilized to stabile the chest, this intervention has been found to decrease chest expansion and worsen lung atelectasis. Conservative treatment for mild to moderate flail chest includes analgesic relief of pain, chest physiotherapy that encourages frequent coughing and restriction of fluids to prevent fluid overload, however this patient needs early ventilatory support.

49. Which one of the following is incorrect regarding pneumothorax associated with pneumocystis carinii infection?

A. Pentamidine nebulization is a risk factor

B. More prolonged air leaks

C. Simple aspiration is sufficient for treatment

D. High risk of bilateral pneumothorax

E. Treatment failure more in low CD4 counts

Ans: Simple aspiration is sufficient for treatment

Explanation: pneumocystis causes a severe form of necrotizing alveolitis in which the sub-pleural pulmonary parenchyma is replaced bye necrotic thin-walled sister and pneumotoceles. The address administration of nebulised pentamidine has also been suggested as a possible independent risk factor. Pneumothorax caused by PCP have a tendency to more prolonged air leaks, treatment failure, recurrence and higher Hospital mortality. 40% of these patients can develop bilateral pneumothorax. Treatment failures correlate with the degree of immunosuppression, low CD4 count increase the risk. Due to these features tube drainage, pleurodesis and pleurectomy should be done early. Simple aspiration is not successful in this case even in the first instance.

50. A 27 year old female admitted to you with history of low grade fever, cough with sputum, night sweats and weight loss for 2 months. CXR showed a thick wall cavity in right upper zone. 2 samples of sputum came out to be positive for AFB. Patient never took ATT before. Assuming that Pakistan is the country with high isoniazid resistance what will be your prescription for her?

A. 2 HRZE/4HR

B. 2 HRZES/5 HRE

[✓ C. 2 HRZE/4HRE]

[✓ D. 2 HRZES/4 HR]

E. 6HRZES

②-5-8)

Ans: 2HRZE/4HRE

Explanation: This is a category 1 pulmonary tuberculosis as she has never taken ATT before. For category 1 the treatment regimen is 2HRZE/4HR. But in areas with high isoniazid resistance of more than 12% in population, WHO recommends adding ethambutol in continuation phase.

51. A patient diagnosed case of bronchiectasis has been investigated with sputum for AFB. All the three samples came out +++. You suspect atypical mycobacterial infection. Which of the following test will differentiate between mycobacterium TB and atypical mycobacterium rapidly?

A. CXR PA view

B. serum ADA level

IR

[✓ C. GeneXpert test]

[✓ D. QuantiFeron test]

γ

E. Sputum culture

Ans: GeneXpert test

Explanation: Mycobacterium tuberculosis in sputum is mainly detected by acid-fast bacillus (AFB) staining and the identification of sputum-derived cultures. Atypical mycobacterium can also cause positive acid fast stain. The quickest method is MTB DNA by PCR testing which will be positive with a sensitivity of more than 97% in positive sputum smear. Culture is gold standard but it needs 4 to 6 weeks to grow the organisms.

52. Patient on ATT developed hepatitis during intensive phase of therapy. ATT stopped and LFTs monitored daily. Now LFTs are normal. You want to start ATT again. Which drug you will start first?

A. Rifampicin

B. INH

C. Ethambutol

D. PZA

E. Streptomycin

CPK Refam

Ans: Rifampicin

Explanation: ATT induced hepatitis is defined as ALT more than 5 times of normal without symptoms or three times of normal with symptoms of hepatitis. Treatment should be stopped and start again when hepatic function are normal. All the 1st line ATT drugs are hepatotoxic except ethambutol. Rifampicin is started first in low dose followed by isoniazid. Pyrazinamide is mostly avoided after hepatitis.

53. Which one of the following side effect is the absolute contraindication for rifampicin use in future?

A. Acute interstitial nephritis

B. Anemia

AIN

C. Hepatitis

D. Thrombocytopenia

E. Pseudomembranous colitis

Ans: Thrombocytopenia

Explanation: Two absolute contraindication of rifampin use are hypersensitivity reaction to rifampicin and thrombocytopenia (TTP) associated with rifampin. All other are side effects of rifampin when it is used intermittently. (**If asked about bleeding during ATT treatment, the cause is rifampicin associated thrombocytopenia or very rarely DIC. As a rare adverse effect, DIC induced by rifampicin occurs irregularly and unpredictably, which is reported to be more associated with the intermittent usage of rifampicin, but can occur with rifampicin daily administration. Treatment is to stop rifampicin, platelets transfusion and FFPs).**

54. MDR TB is resistant to:

A. Rifampicin

B. Isoniazid

C. Rifampicin+ isoniazid

D. Rifampicin + ethambutol

E. Isoniazid + ethambutol

Ans: Rifampicin + isoniazid

Explanation: When TB is resistant to isoniazid and Rifampicin it is called MDR TB.

55. Treatment for MDR TB should be continued for how much time?

A. 9 months

B. 12 months

C. 15 months

D. 18 months

E. 24 months

Ans: 18 months

Explanation: Optimal duration of treatment for MDR TB is recommended for 18 months for previously untreated MDR TB which includes 6 months of intensive therapy with an injectable followed by 12 months of continuation phase.

56. A patient of pulmonary TB is on treatment develops excruciating pain in right big toe for 3 days. Which drug is most probably causing this problem?

A. Isoniazid

B. Rifampicin

C. Ethambutol

D. Pyrazinamide ✓

E. Streptomycin

Ans: Pyrazinamide

Explanation: Hyperurecemia and arthralgia are caused by pyrazinamide which should be managed with aspirin. Gouty arthritis caused by pyrazinamide is an indication for stopping the drug.

57. A bus driver on ATT came to you complaining of blurring of vision. He also told you that he has three traffic challans because he is unable to differentiate between colors at signals. Which drug should be stopped?

A. Isoniazid

B. Rifampicin

C. Ethambutol ✓

D. Pyrazinamide

E. Levofloxacin

Ans: Ethambutol

Explanation: Ethambutol-induced optic neuropathy (EON) is a well-known complication that results from the use of ethambutol. The ocular manifestations of EON include painless loss of central vision and cecocentral scotomas in the visual field. The toxicity is usually reversible on discontinuation of the therapy. It also causes red- green color blindness.

58. A diabetic patient is diagnosed as having tuberculosis on ATT complains of burning sensation in both feet associated with numbness more at night time for 2 months after starting ATT. Which drug is causing this symptom?

A. Isoniazid ✓

B. Rifampicin

C. Ethambutol

Optic neuritis

D. Pyrazinamide

E. Streptomycin

Ans: Isoniazid

Explanation: Development of polyneuropathy under treatment for tuberculosis caused by **isoniazid** is a highly relevant adverse drug effect. This usually presents with paresthesia which can be accompanied by muscle aches, occasionally muscular weakness, and can progress to more severe symptoms such as ataxia. Risk factors for developing neuropathy after isoniazid therapy include old age, slow acetylator status, diabetes, renal failure, alcoholism, malnutrition, HIV infection, chronic hepatic failure and pregnancy. Isoniazid-induced neuropathy is dose-related. Symptoms after initiation of treatment in patients receiving conventional doses rarely appear before 6 months. To prevent this pyridoxine 10-50 mg should be added to regimen in high risk patients.

59. Which one of the following is an indication of steroid therapy along with ATT?

A. Pulmonary TB

B. Tuberculous Pleural effusion

C. GI TB

[✓ D. Pericardial TB]

E. Genitourinary TB

Ans: Pericardial TB

Explanation: The three indications of steroids treatment in TB along with standard ATT are:

- Tuberculous pericarditis and effusion
- Tuberculous meningitis
- Tuberculous adrenalitis

In tuberculous pleural effusion, the role of steroids is controversial.

60. Which one of the following is the most common cause of treatment failure in TB worldwide?

A. Drug resistance

B. Lack of adherence

C. Poor drug quality

D. Poor nutrition

E. Poor social support

Ans: Lack of adherence

Explanation: Lack of adherence to treatment is the most common and important cause of treatment failure. Other factors also contribute to treatment failure and should also be addressed properly.

61. A patient of CKD stage 3a is diagnosed as having pulmonary TB. Which drug should be used after dose modification?

A. Isoniazid

B. Rifampicin

C. Ethambutol EW 3 4

D. Pyrazinamide

E. Streptomycin

Ans: ethambutol

Explanation: Patients with CKD should not receive aminoglycoside and should receive ethambutol after dose modification. Isoniazid, rifampicin and pyrazinamide can be used in mild to moderate CKD at usual dose.

62. A 25 year old female who is pregnant diagnosed as having pulmonary TB. What is the regimen of choice for this patient?

A. 2HRZE/4HR

B. 2HRE/7HR

C. 2HRZES/7HRE 7

D. 3HRZES/5HRE 2

E. 9 HRE IN

Ans: 2 HRE/7HR

Explanation: The regimen of choice for pregnant women is 9 months of isoniazid and rifampicin supplemented by ethambutol for the first 2 months. Pyrazinamide can be used in pregnancy as it a category C drug but there is insufficient data about its safety in pregnancy. Streptomycin is contraindicated as it causes eighth cranial nerve damage in fetus.

3 4
3 5

63. A patient on MDR TB treatment presented with slowness with fatigue, dry skin and constipation. Labs showed high TSH level. Which drug is responsible for this? EH DHE

A. Cycloserine

B. Ethionamide

C. Amikacin

D. Thiacetazone

E. Bedaquiline

Ans: Ethionamide

Explanation: Ethionamide is the most common cause of hypothyroidism caused by second line ATT. Other cause includes PAS. Cycloserine causes CNS related side effects. Amikacin is nephrotoxic. Thiacetazone is associated with severe skin reaction that is why it is not used now a days. Bedaquiline is a new second line ATT drug. It causes QT prolongation and liver toxicity.

64. A 35 year old female diagnosed case of military TB on standard ATT for 7 months admitted with anasarca and worsening SOB. CXR showed B/L pleural effusions and pericardial effusion. JVP was normal with pitting edema up to midthighs. What is your diagnosis?

A. Constrictive pericarditis
B. Nephrotic syndrome ✓ Rej
C. CCF
D. Cirrhosis
E. Malabsorption

T.B + Renal Amyloidosis

Ans: Nephrotic syndrome

Explanation: This is a case of tuberculosis associated amyloidosis. Renal amyloidosis is an important complication of PTB and should be suspected clinically in patients presenting with a triad of pedal edema, proteinuria, and medical renal disease on ultrasound. Renal amyloidosis can occur in PTB patients having disease for relatively shorter duration, and even if adequately treated. In developing countries, TB is the most common cause of amyloidosis. In constructive pericarditis JVP is elevated. Malabsorption is commonly associated with GI TB.

65. Which one of the following is the most common extra pulmonary site of tuberculosis?

A. Pleural TB ✓

B. Lymph Nodes TB

C. Genitourinary TB

D. Skeletal TB

E. Gastrointestinal TB

Ans: Lymph node TB

Explanation: The most common presentation of extra pulmonary TB is lymph node TB. It accounts for more than 40% cases of extra pulmonary TB. Pleural TB accounts for 20% cases. Genitourinary TB accounts for 10-15% cases. TB of bones and joints is responsible for 10% of cases. Gastrointestinal TB makes up only 3.5% of cases.

2 9

66. A diagnosed case of silicosis patient developed pulmonary TB. What should be the minimum treatment duration of ATT in this patient?

4

4 · 2 1

2 3

2 7 5

3 5 3

2 7

A. 6 months

[✓ B. 8 months]

C. 9 months

D. 12 months

E. 15 months

Ans: 8 months

Explanation: Patients with silicosis are at increased risk of developing TB. If TB develops in these patients, it is called silicotuberculosis. For these patients, treatment duration should be extended by at least 2 months.

67. Which of the following diagnostics tests is intended for latent tuberculosis infection?

A. AFB staining

B. genXpert ✓

[✓ C. Interferon gamma release assay]

D. Elisa for antibodies

E. Auramine staining

Ans: Interferon gamma release assay

Explanation: IGRA (TB GOLD) is meant for the diagnosis of latent TB and should not be used for that diagnosis of active TB. Latent tuberculosis infection (LTBI), defined as a state of persistent immune response to prior-acquired mycobacterium tuberculosis antigens without evidence of clinically manifested active TB. At risk patients should be screened with skin testing or IGRA.

68. Which of the following drugs has the highest potential to produce exfoliative dermatitis?

A. Isoniazid

B. Rifampicin

C. Ethambutol

[✓ D. Pyrazinamide]

E. Moxifloxacin

Ans: Pyrazinamide

Explanation: The propensity of the drugs to cause exfoliative dermatitis is PZA>Streptomycin>ethambutol>RIF>INH. All the drugs should be stopped and reintroduce with INH followed by RIF with careful monitoring.

69. Regarding pathophysiology of COPD, Which of the following is incorrect?

A. Persistent reduction in FEV1

B. Increase residual volume

C. Decrease RV/ TLC

D. Decrease inspiratory reserve volume

E. Ventilation perfusion mismatching

D

Ans: Decrease RV/TLC

Explanation: Common changes in COPD are:

- **Hyperinflation at rest and dynamic hyperinflation during exercise**
- **Hyperinflation reduces the inspiratory capacity and decrease inspiratory reserve volume.**
- **Ventilation perfusion mismatching occurs due to anatomical changes in COPD**
- **COPD is an obstructive disease with airflow obstruction during expiration. Residual volume increased in these patients with an increase in RV/TLC ratio.**

70. Which one of the following combinations of interventions influence the natural history of COPD?

A. Smoking cessation + ICS
B. Smoking cessation + LABA+ ICS
C. Smoking cessation + LTOT + lung volume reduction surgery
D. Smoking cessation + LABA + LTOT
E. Smoking cessation + LTOT + Roflumilast

Ans: Smoking cessation + LTOT + lung volume reduction surgery

Explanation: Smoking cessation + LTOT + LVRS of the upper lobe emphysema influence the natural history of COPD. All other interventions only reduce symptoms or reduce the incidence of exacerbation.

71. A 60 year old male chronic smoker presented to you in OPD with progressive dyspnea for 5 years. He told you that now he has to stop to catch his breath after walking 100 meters on flat. He had 3 exacerbations of symptoms in last 1 year. Spirometry was done which showed FEV1 of 25%. Further assessment by CAT (COPD assessment test) showed a score of 14. What should be the ideal management for this patient?

A. SABA PRN

B. ICS + SABA

C. ICS + LABA

D. ICS+ LABA or LAMA

E. ICS + LABA + LAMA

Ans: ICS+ LABA + LAMA

1500 m

SABA + SAMA.

FEV_1 > 50

< 50%.

LABA + ICS.

Explanation: Please read latest GOLD guidelines for management of COPD according to stage.

72. Patient was admitted with acute exacerbation of COPD. You managed the patient with standard medical therapy and plan for discharge. Which one of the following clinical criteria preclude the patient as a candidate for successful discharge?

A. No oxygen requirements for last 24 hours

B. clinically stable for 12 to 24 hours

C. Inhaled SABA Q2 hrly

D. Stable ABGs for 24 hours

E. Able to sleep and eat without dyspnea

5 5

Ans: Inhaled SABA q 2 hourly

Explanation: inhaled SABA not more than 8 hrly is the criteria for successful discharge.

73. Which one of the following is not a contraindication for lung volume reduction surgery in COPD?

A. Diffusely distributed emphysema on CT scan

B. DLCO2 < 20% of predicted

C. Congestive heart failure

D

D. Low post rehabilitation exercise capacity ✓

E. Pulmonary artery systolic pressure > 45 mmhg.

Ans: Low post rehabilitation exercise capacity

Explanation: Lung volume reduction surgery is indicated in upper lobe emphysema associated with low post rehabilitation exercise capacity. All the other factors are contraindication for LVRS and are an indication of lung transplant.

74. You are called from surgery department to evaluate a patient of COPD admitted for hernia repair. Patient is becoming more drowsy for the last 4 hours. ABGs showed pH of 7.29 with paCO2 of 55 and PaO2 of 150 mmHg. Patient is on 10 liters of oxygen. What should be your next management plan?

A. BiPAP therapy A

35-45

B. Decrease oxygen to 2L and repeat ABG after 2 hours

7.35-7↑

C. Mechanical ventilation

D. Nebulization with SABA

E. IV steroids

Ans: Decrease oxygen to 2L and repeat ABG after 2 hours

Explanation: This patient is on high flow oxygen therapy. Patients of COPD are insensitive to a rise in CO2 and respiratory center is on hypoxic drive. With high flow oxygen, hypercapnia develops. So in patients with COPD, low flow oxygen should be used. Supplemental oxygen removes the hypoxic respiratory drive causing hypoventilation resulting in hypercapnia, apnea and respiratory failure. Another theory is that COPD patients more perfusion to parts of lung that are normal. Administration of high flow oxygen increased the PaO2 to diseased portions and steal perfusion away from better functioning area resulting in shunting, dead space ventilation and hypercapnia.

75. A patient of COPD is admitted in emergency with acute exacerbation. His oxygen saturation is 85% on room air. What should be the initial target saturation in this patient?

A. 85-88%

B. 88-92% ✓

C. 92-96%

D. 94-98%

E. 96-100%

Ans: 88-92%

Explanation: Patients with acute exacerbation of COPD should be given controlled oxygen therapy initially with a target oxygen saturation of 88-92%. ABGs should be done within 30 minutes to 1 hour and if there is no hypercapnic respiratory failure, target can be increased to 92-94% with regular ABGs measurements.

76. A patient of COPD is admitted in emergency with an acute infective exacerbation. You have started the standard medical therapy with antibiotics. ABGs showed ph of 7.26, PACO2 of 60 and PAO2 of 65. Patient is well oriented and hemodynamically stable. What should be the next best management step in this patient?

A. Continue same treatment

B. Repeat ABGs after 12 hours

C. Mechanical ventilation

D. NIV therapy

E. Increase the flow of oxygen

4.7-6

PCO$_2$ > 50mmHg)

Ans: NIV therapy

Explanation: Indication of NIV in acute exacerbation are:

- pH 7.25 to 7.35
- PaCO2 > 50 mmHg
- Severe dyspnea with clinical signs suggestive of muscle fatigue and increased work of breathing or both such as use of accessory muscles, paradoxical motion of the abdomen or retraction of intercostal spaces.

- Persistent hypoxemia despite oxygen therapy

BiPAP is used in patients with COPD with ventilatory failure.

77. A diagnosed case of COPD came to you with worsening SOB and an echo report which showed severe pulmonary hypertension. What will be the definite treatment for this patient?

A. Physiotherapy

B. Bosentin

C. LTOT ✓

D. Steroids

E. Antibiotics

3

15:2

Ans: LTOT

Explanation: Pulmonary hypertension is a common complication of chronic obstructive pulmonary disease (COPD); such a complication is associated with increased risks of exacerbation and decreased survival. Pulmonary hypertension usually worsens during exercise, sleep and exacerbation. Pulmonary vascular remodeling in COPD is the main cause of increase in pulmonary artery pressure and is thought to result from the combined effects of hypoxia, inflammation and loss of capillaries in severe emphysema. Long term oxygen therapy is the only definite treatment for these patients. Medicine used to treat primary pulmonary Hypertension are not indicated in this patient.

78. A patient of COPD with Cor pulmonale is admitted with acute hypercapnic respiratory failure. ABGs on admission were pH 7.25, Paco2 75 with HCO3 of 28. Patient was managed with BiPAP therapy for 3 days. Latest ABGs showed pH 7.55 with paco2 of 45 and HCO3 of 40. What should be the next treatment?

4-7-6

↓

A. Normal saline

B. Continue BiPAP

C. furosemide

D. Acetazolamide ✓

E. Steroids

hypokalemi

Ans: Acetazolamide

Explanation: This is a case of post hypercapnic metabolic alkalosis. The treatment of hypercapnic COPD frequently induce a state of persistent metabolic alkalosis after the return of PaCO2 to normal. Metabolic alkalosis in patients with COPD diminish the activity of the central respiratory center and cardiac output. It can also leads to hypokalemia and hypophosphatemia leading to muscle weakness. Metabolic alkalosis are treated mostly with saline infusion or with Acetazolamide with potassium correction. As this patient is having cor pulmonale, saline should be avoided and acetazolamide should be given. Furosemide and steroids will worsen the metabolic alkalosis.

79. What is the most common cause of massive hemoptysis worldwide?

A. Acute bronchitis

B. Tuberculosis

C. Lung cancer

D. Bronchiectasis

E. AV malformations

Ans: Tuberculosis

Explanation: Massive hemoptysis is a term used to describe a large amount of expectorated blood or rapid rate of bleeding, giving the impression that it, in and of itself, is associated with a serious risk of mortality. Massive hemoptysis magnitude of effect is defined as the volume of expectorated blood that is life-threatening by virtue of airway obstruction, hypotension or blood loss. Tuberculosis is the most common cause of massive hemoptysis followed by bronchiectasis, lung abscess and Aspergilloma. Acute bronchitis is the most common cause of hemoptysis overall but it rarely causes massive hemoptysis. Patients with lung cancer commonly presents with hemoptysis but only 3% of them have massive hemoptysis. Massive hemoptysis usually arises from high-pressure bronchial circulation. Massive hemoptysis can be a consequence of either active or prior TB. In active TB, massive hemoptysis can occur in cavitary or non-cavitary disease. This usually results from bronchiolar ulceration with necrosis of adjacent blood vessels. Bleeding is usually from the bronchial arterial circulation, but occasionally active TB may cause rupture of a Rasmussen's aneurysm, which is derived from the pulmonary arterial circulation. In prior TB, causes of massive hemoptysis are usually a consequence of either erosion of a calcified lymph node through a bronchial artery and into an airway, bronchiectasis secondary to structural damage from prior TB, or Aspergilloma formation in a lung cavity from prior infection with TB.

80. A patient presented with complaints of recurrent episodes of hemoptysis for the last 3 months. All the blood tests and chest X-RAY are normal. What should be the next best investigation?

A. Fibro optic bronchoscopy

B. CT chest

C. Angiography

D. Rigid bronchoscopy

E. MRI chest

HRCT chest

Ans: CT chest

Explanation: Work up for hemoptysis includes:

- Lab tests including coagulation parameters, CBC and liver function.
- Chest X-ray

- If chest x-ray is normal then contrast enhanced CT of chest with or without CT angiography
- If the CXR or CT does not pinpoint the cause then bronchoscopy.

81. Asthma control is assessed by measuring symptom control and which of the following?

A. The efficacy of the patient's rescue medication

B. The patient's understanding of their asthma action plan

C. The severity of the asthma

D. The patient's future risk for adverse outcomes

E. Use of preventive therapy

Ans: Future risk of adverse outcomes

Explanation: Asthma control is assessed by the level of symptom control and a patient's risk for adverse outcomes. Even if a patient has few asthma symptoms, other factors can increase the chance of exacerbations. These risk factors include issues around medication (e.g., poor adherence, incorrect inhaler technique), comorbidities (e.g., obesity, chronic rhino sinusitis, gastro esophageal reflux disease), environmental exposures (e.g., smoking, allergies, air pollution), lung function, and more.

82. How often should asthma symptom control be assessed?

A. At every opportunity, including during prescribing

B. During exacerbations

C. At least monthly

D. Annually

E. 3 monthly

OPD
[illegible]
every

Ans: At every opportunity including during prescribing

Explanation: Physicians should assess asthma symptom control at every opportunity, including during routine prescribing or dispensing. Directed questioning is important because patients' expectations of their symptoms and treatment can vary greatly, as can their thoughts on what is acceptable or bothersome. ask about (1) frequency of asthma symptoms, (2) night waking, and (3) frequency of short-acting β-agonist use for symptom relief. Managing asthma with a continuous cycle of assessment, treatment, and review is known as "control-based asthma management." Asthma outcomes have been shown to improve with the use of this method.

83. A diagnosis of severe asthma should be made after about how many months of uncontrolled asthma?

A. 1 month

B. 3-6 months

C. 6-9 months

D. 9-12 months

E. More than 1 year

Ans: 3- 6 months

9-12

Explanation: According to the GINA guidelines, a diagnosis of severe asthma should be made if difficult-to-treat asthma remains after about 3-6 months of management that includes:

- Providing asthma education
- Optimizing treatment
- Treating comorbidities and modifiable risk factors
- Considering nonbiologic add-on therapy, nonpharmacologic interventions, and a trial of high-dose inhaled corticosteroids

When a patient is diagnosed with severe asthma, the GINA report recommends referring the patient to a specialist.

84. A 26 year old gentleman diagnosed case of asthma using inhaled SABA PRN and low dose ICS as the only treatment came to OPD for review. He told you that he needs frequent use of his SABA inhaler at times 4 times during a day. His inhaler technique is good. What should be the next management step?

A. Continue with same therapy

B. Add LABA to low dose ICS

C. Montileukast

D. LAMA

E. high dose ICS

BF

Ans: Add LABA to low dose ICS

Explanation: For step wise management of asthma, please read GINA guidelines.

85. A 40 year old lady admitted to you in ER with sudden onset of SOB and wheezing. O/E, Patient was in respiratory distress with RR of 32/min. PEFR was 40% of predicted. You managed the patient with O2 therapy, nebulized SABA and SAMA and IV hydrocortisone. After 1 hour you assessed the patient who had little improvement despite back to back nebulization. You ordered ABGs which came to be as:

pH 7.32 PaCO2 55 mmhg PaO2 70mmhg at FIO2 of 40%: What should be the next best management?

A. BiPAP therapy
B. CPAP therapy
C. Continue same therapy
D. Intubation and mechanical ventilation
E. Aminophylline infusion.

Ans: Intubation and mechanical ventilation

Explanation: This patient is in status asthmaticus that remains unresponsive to initial treatment with bronchodilators. It is the extreme form of an asthma exacerbation that can result in hypoxemia, hyperbaria, and secondary respiratory failure. There are four stages of ABGs abnormalities in status asthmaticus:

- **Stage 1** - Characterized by hyperventilation with a normal partial pressure of oxygen.
- **Stage 2**- Characterized by hyperventilation accompanied by hypoxemia (i.e., a low partial pressure of carbon dioxide PCO2 and low PO2)
- **Stage 3** - Characterized by the presence of a false-normal PCO2, ventilation has decreased from the hyperventilation present in the second stage; this is an extremely serious sign of respiratory muscle fatigue that signals the need for more intensive medical care, such as admission to an ICU and, probably, intubation with mechanical ventilation.
- **Stage 4** - Characterized by a low PO2 and a high PCO2, which occurs with respiratory muscle insufficiency; this is an even more serious sign that mandates intubation and ventilatory support.

2 [illegible]

This patient is in stage 4 status asthmaticus, so mechanical ventilation is recommended.

86. A 26 year old boy presented with chest tightness, wheeze and SOB. On detailed history, he told you that he is working in a power loom and these symptoms becomes worse during working hours and he feels much better in evening and on weekends. Best test to diagnose?

A. CXR

B. Spirometry with reversibility

C. Serial PEFR measurements ✓

D. Meth choline challenge test

E. HRCT chest

wheeze SOB

occupational

Ans: Serial PEFR measurements

Explanation: This is a case of occupational or work related asthma. Work-related asthma, which includes occupational asthma and work-aggravated asthma, has become one of the most prevalent occupational lung diseases. Occupational asthma is a disease characterized by variable airflow limitation and/or hyper responsiveness associated with inflammation due to causes and conditions attributable to a particular occupational environment and not to stimuli encountered outside the workplace. The sensitivity and specificity of serial peak flow measurements is high in the diagnosis of work-related asthma and should be used for diagnosis. Methacholine challenge test can be normal in some patients after 24 hours of exposure to noxious agent. Spirometry and tests for reversibility, increased diurnal variation in PEF, sputum eosinophilia and exhaled nitric oxide may all help confirm asthma, but may all be normal in individuals with occupational asthma confirmed with specific challenge tests. Measuring lung function in relation to work exposure is the best method of confirming occupational asthma. This can only be done when the patient is still exposed to the suspected cause of their symptoms, so it needs to be the first confirmatory test. Serial measurement of PEF on days at and away from work is the best validated method and is recommended. Minimum criteria are ≥3 weeks of usual work exposure with measurements at least four times a day, or 8 work days and 3 rest days with 2-hourly measurements, with treatment being kept constant.

87. A patient with a history of difficult to control asthma has HRCT chest done which showed central bronchiectasis. What should be the next treatment?

A. Itraconazole

B. Broad spectrum antibiotics

[✓ C. Steroid]

D. Theophylline

E. Omalizumab

Plo

ABPA

O

Ans: Steroids

Explanation: This is a case of allergic bronchopulmonary aspergillosis (ABPA). Allergic bronchopulmonary aspergillosis (ABPA) is a complex clinical entity that results from an allergic immune response to Aspergillus fumigatus, most often occurring in a patient with asthma or cystic fibrosis. Major Criteria for diagnosis is:

- Uncontrolled asthma
- Immediate cutaneous reactivity to A. fumigatus,
- Total serum IgE >1000
- Elevated specific IgE-/IgG-A. fumigatus
- Central bronchiectasis in the absence of distal bronchiectasis.

Minor criteria are:

- The presence of precipitating or IgG antibodies against A. fumigatus in serum
- Radiographic pulmonary opacities consistent with ABPA
- A total eosinophil count >500 cells in steroid naïve patients.

Oral corticosteroids are the mainstay for the treatment of ABPA. Steroid treatment protocol is prednisolone (0.5 mg/kg/day for the first 2 weeks followed by 0.5 mg/kg/day on alternate days for the next 2 months. Once decline in the total serum IgE level >35% is achieved, the dosage can be tapered off by 2.5 mg every 2 weeks. use of Itraconazole alone should be restricted to patients in whom oral corticosteroids are absolutely contraindicated. Itraconazole may be added in patients experiencing recurrent exacerbations despite adequate steroid therapy. Omalizumab is used is ABPA with cystic fibrosis.

88. A 35 year old patient who is a diagnosed case of asthma for 3 years on recurrent episodes of exacerbations despite taking maximum dose of ICS and LABA came for review. Patient has taken 4 courses of oral Steroids in last year. Inhaler technique and compliance is optimal. Serum IgE level is 700(normal ≤ 30). What should be the next best treatment?

A. Continue same treatment with high dose ICS and LABA

B. Oral Steroids for 6 months

C. Omalizumab therapy ✓

D. Itraconazole

E. Theophylline

IgE ↑,

50IU/Kg

25 u/Kg / 2hours

Ans: Omalizumab therapy

Explanation: Omalizumab is approved for the treatment of adults and adolescents aged 12 years and above with moderate to severe persistent allergic asthma whose symptoms are poorly controlled with inhaled corticosteroids and long acting beta agonist. For the purpose of using omalizumab the term allergic is defined as a positive skin test or in vitro reactivity to a perennial aeroallergen and in addition the serum total IgE levels should be in the range 30 to 700 IU/mL. The dose of Omalizumab and dose frequency is based on the serum total IgE level (IU/mL) and the patient's body weight (kg). Based on this calculation, Omalizumab is given at a dose of 150 to 375 mg by subcutaneous injection every 2 or 4 weeks.

89. A 26 year old patient presented in ER with H/O SOB with right sided chest pain for 3 hours. He told you that he has fever with right upper quadrant abdominal pain for the last 2 weeks. What can be the cause ?

A. Acute hepatitis

B. Pulmonary infarction

C. Pneumonia

D. Ruptured hepatic abscess

E. Acute cholecystitis

70
25) 425
24
108
50X
600 I.

500 I

600
25
3000
1200X
15000

20000
35 ml

Ans: Ruptured hepatic abscess

Explanation: This chain of events probably suggests a ruptured hepatic abscess with extension to lung. The most common complications of liver abscess arise from rupture of the abscess into surrounding organs or anatomical spaces. Communication occurs in the peritoneum, viscera, and large vessels on one side of the diaphragm and the pleura, bronchi, lungs, and pericardium on the other side. It is a surgical emergency.

90. A 40 year female patient presented with acute severe asthma and was put on mechanical ventilation. Which of the following ventilation strategy is suitable for her?

A. Decrease tidal volume

B. Increase expiratory flow

C. Increase respiratory rate

D. Decrease inspiratory flow

[✓ E. Increase tidal volume]

Ans: Decrease tidal volume

Explanation: Because gas-trapping is potentially associated with significant adverse events in severe asthma, so strategies should be used to limit it. These strategies include controlled hypoventilation (reduced tidal volumes [less gas to exhale] and reduced respiratory rates [longer expiratory time]), relieving expiratory flow resistance, reducing inspiratory time by increasing the inspiratory flow or incorporating nondistensible tubing, and reducing the need for high minute ventilation by decreasing carbon dioxide production. Increasing expiratory time rather than flow is used to reduce the risk of hyperinflation.

91. Which one of the following is mandatory in patients with acute severe asthma?

A. IV Steroids

[✓ B. High flow oxygen]

C. Aminophylline infusion

D. Magnesium sulphate

E. Antibiotics

Ans: High flow oxygen

Explanation: Early initiation of high flow oxygen therapy is most important in acute severe asthma because the cause of death in these patients is asphyxia. Supplemental oxygen should be given to maintain an SaO2 greater than 90%. Steroids should also be given. Magnesium sulphate is given after a failure of response to initial treatment or when FEV1 is less than 25% of predicated on presentation. Use of routine antibiotics is not recommended as aminophylline infusion.

92. Which one of the following is not a feature of severe asthma?

A. Talks in words

B. RR >30

C. PR > 120

D. Absent wheezing

E. PEF < 34%

Ans: Absent wheezing

Explanation: Absence of wheezing with silent chest is a sign of imminent respiratory failure in life-threatening asthma. In severe asthma, patient is breathless at rest which interferes with conversation, patient talks in words and usually agitated. RR is often > 30 ,PR > 120, patient sits upright and usually uses accessory muscles of respiration. Pulsus paradoxus is present with > 25 mmhg. Chest examination showed prolonged expiration with polyphonic wheezing throughout inhalation and exhalation. PEF is < 40% but more than 25%.

93. A patient with history of smoking presented with shortness of breath. Which one of the following is more suggestive that patient is having emphysema rather than bronchitis?

A. Productive cough

B. Polycythemia

C. Dirty lungs on x-ray

D. Increased static lung compliance

E. Peripheral edema

TLCO

Ans: Increased static lung compliance

Explanation: In chronic bronchitis, productive cough and mild dyspnea is present. Patients are usually overweight and cyanotic but comfortable at rest. Peripheral edema is common. Chest is noisy with rhonchi and wheezing. Hemoglobin usually elevated with low partial pressure of oxygen and elevated partial pressure of carbon dioxide. Chest x Ray shows increased interstitial markings causing dirty lungs specially at bases. Diaphragm are not flattened. Spirometry shows airflow obstruction with slightly increased total lung capacity with normal DLco. Static lung compliance normal. Commonly associated with OSA.

In Emphysema, major complaint is dyspnea. Cough is rare with clear sputum. Patients are thin with recent weight loss and appear uncomfortable at rest. Chest is very quiet without any sounds. no peripheral edema. Hemoglobin is usually normal with normal to slightly reduced partial pressure of oxygen with normal partial pressure of carbon dioxide. Chest x ray shows hyperinflation with flattened diaphragms. Vascular markings are diminished particularly at the apices. Spirometry shows airflow obstruction with increased total lung capacity and reduced DLco. Static lung compliance is increased. DRV RV

94. A 27 old man has been referred to the OPD with gradually worsening difficulty in breathing that is more pronounced on lying flat and partially relieved by sitting upright. The only past medical history is that of a prolonged period of recovery following a childhood illness. PFTs were done. Results are as follow:

FEV1 55% of predicted, FVC 65% of predicted, FEV1/FVC 0.80 (normal), TLCO 80% of predicted (normal) KCO 110% (slightly increase), FVC falls more than 25% on lying flat. What is the diagnosis?

A. Congestive heart failure
B. Idiopathic pulmonary fibrosis
C. Asthma
D. Sarcoidosis
E. Diaphragmatic paralysis

Ans: Diaphragmatic paralysis

Explanation: PFT results show a restrictive defect with normal DLCO and KCO which means that lung parenchyma is normal and problem is chest wall or diaphragm. Fall of FEV1 with lying down suggests Diaphragmatic paralysis as patient has prolonged illness in childhood most probably poliomyelitis. The diaphragm is the primary muscle of respiration, and its weakness can lead to respiratory failure. Diaphragmatic palsy can be caused by various causes. Injury to the phrenic nerve during thoracic surgeries is the most common cause for diaphragmatic palsy. Depending on the cause, the symptoms of diaphragmatic palsies vary from completely asymptomatic to disabling dyspnea requiring mechanical ventilation. On pulmonary function tests, there will be a decrease in the maximum respiratory muscle power. Spirometry shows reduced lung functions and a significant drop of lung function in supine position is typical of diaphragmatic palsy. The dyspnea is associated with debilitating orthopnea. In patients with DP on lying supine, there is extrinsic compression of thoracic cavity by the abdominal organs due to loss of caudal gravitational pull. Also, on lying supine, the chest wall will be in close physical contact with the floor will further preventing thoracic excursion. This positional worsening of respiratory functions will lead to choking sensation on lying down flat on their back. Diaphragmatic movements with respiration can be directly visualized by fluoroscopic examination. Currently, this test is being replaced by bedside thoracic ultrasound examination, looking at the diaphragmic excursion with deep breathing or sniffing. For bilateral diaphragmatic weakness, noninvasive positive pressure ventilation is the viable non-surgical treatment option.

95. A 35 year old woman is being investigated for severe SOB of six months duration. She does not smoke and has had no previous illnesses. Her only medication is the OCP. Her HB 12.3 g/dl. Her PFTs are as follow:

FEV1 102% of predicted, FVC 103% of predicted, FEV1/FVC 80% of predicted, TLCO 55% of predicted, KCO 60% of predicted.

What is your probable diagnosis?

55%

[✓ A. Anemia]
B. Idiopathic pulmonary fibrosis
C. Multiple pulmonary emboli
D. Emphysema
E. Pulmonary hemorrhage

Ans: Multiple pulmonary emboli

Explanation: PFTs show normal FEV1 and FVC with normal ratio and decreased KCO and TLCO which rules out IPF in which there is restrictive defect and emphysema which shows obstructive defect. A reduce level of DLCO and KCO suggest either interstitial lung disease or pulmonary vascular disease. As FVC is normal which rules out ILD so most probable diagnosis is vascular disease due to multiple pulmonary emboli in a young patient who is also using OCP which is a risk factor for DVT and PE. Pulmonary hemorrhage causes increase TLCO. Anemia also causes low TLCO but history suggests recurrent emboli.

96. A 29 year old male is investigated for a chronic cough with PFTs which showed FEV1 65% of predicated, FVC 95% of predicated, FEV1/FVC 0.68. after 20 minutes of bronchodilators FEV1 raised 300 ml. What is the diagnosis?

A. Emphysema

B. Chronic bronchitis

C. Asthma

D. Hypersensitivity pneumonitis

E. Idiopathic pulmonary fibrosis

Ans: Asthma

Explanation: PFT results show an obstructive picture with a positive bronchodilators response which suggests asthma. A positive response to a bronchodilator is generally defined as an increase of ≥12% and ≥200 mL as an absolute value compared with a baseline in either forced expiratory volume at 1 second or FVC. In COPD, this response is less than 10%. ILD and HP cause restrictive defects. Ventilatory disorders can be divided into three main types on PFTs. Obstructive ventilatory disorders occur when maximum flow rate is reduced compared with maximal volume, FVC, during a forced exhalation maneuver due to airway obstruction. When FEV1/FVC is less than 0.7 in spirometry, it is interpreted as having obstructive ventilatory defects. FEV1 is reduced when obstructive pulmonary disease further progresses causing severe airway obstruction. Representative diseases of obstructive pulmonary disease include asthma and COPD. Restrictive ventilation disorders are characterized by a reduced TLC with normal FEV1/FVC. Spirometry can confirm that FVC is reduced, while FEV1 may be reduced secondarily to a reduction in FVC, or relatively maintains as normal. As a result, FEV1/FVC is normal or may increase slightly. Pulmonary fibrosis, chest wall disease, or neuromuscular diseases can show restrictive ventilatory defects. Measurement of diffusing capacity is necessary to differentiate pulmonary parenchyma disease, chest wall disease, and neuromuscular disease. Mixed ventilation disorders occur when obstructive and restrictive ventilatory defects occur together, in which FEV1/FVC decreases, as well as TLC. Obstructive or restrictive ventilatory defects can show a decrease in FVC from spirometry. Therefore, measurement of TLC is required to accurately determine the concurrence of restrictive and obstructive ventilatory defects. Mixed ventilatory defects are observed in fibrothorax accompanied by tuberculosis sequelae-induced airway obstruction or in smokers with COPD accompanied by pulmonary fibrosis.

97. What is the investigation of choice for bronchiectasis?

A. PFTs

B. CXR PA view

C. CT chest with contrast

[✓ D. HRCT chest]

E. Bronchoscopy

Ans: HRCT chest

Explanation: HRCT chest is the investigation of choice whereas Chest xray is the first investigation. Typical findings on HRCT are:

- Increased bronchoarterial ratio in which the ratio of bronchus to adjacent artery becomes more than 1.5 (**signet ring sign**)
- Bronchial wall thickening: normally wall of bronchus should be less than half the width of the accompanying pulmonary artery branch
- Mucoid impaction

Chest x-rays are usually abnormal but are inadequate in the diagnosis or quantification of bronchiectasis. **Tram-track opacities** are seen in cylindrical bronchiectasis, and **air-fluid** levels seen in cystic bronchiectasis. Overall there appears to be an increase in bronchovascular markings, and bronchi seen end-on may appear as **ring shadows**. Pulmonary vasculature appears ill-defined, thought to represent peribronchovascular fibrosis.

98. A patient with a history of cough and fever was investigated by chest x-ray which came out to be normal. HRCT chest done which showed **tree in bud appearance**. What is the most probable cause of patients symptoms?

A. Lung cancer

B. Aspiration Pneumonia

C. Tuberculosis

D. Sarcoidosis

E. Chronic bronchitis

Ans: Tuberculosis

Explanation: Tree-in-bud sign or pattern describes the CT appearance of multiple areas of centrilobular nodules with a linear branching pattern. Typically the centrilobular nodules are 2-4 mm in diameter and peripheral, within 5 mm of the pleural surface. The connection to opacified or thickened branching structures extends proximally. It represents endobronchial spread of infection and the most common cause is tuberculosis in developing countries. Other causes include bacterial Pneumonia, viral Pneumonia, fungal Pneumonia, ABPA, cystic fibrosis, sarcoidosis, lymphoma and bronchoalveolar cell carcinoma.

99. Which one of the following is not a cause of fleeting (migratory) shadowing on CXR PA view?

A. Hypersensitivity pneumonitis
B. Chronic eosinophilic pneumonia
C. Churgg Strauss syndrome
D. ABPA
E. Sarcoidosis

Ans: Sarcoidosis

Explanation: Fleeting or migratory shadows are opacities which usually appear and disappear in different areas of the lung over a period of time as transient pulmonary infiltrates. Common causes are HP, eosinophilic pneumonia, ABPA and Churgg Strauss syndrome.

100. A 45 year old lady presented to OPD with worsening SOB for 1 year and dry cough. O/E, patient has clubbing and B/L fine end inspiratory crackles at bases. CXR showed reticular shadowing at lower zones. HRCT done which showed B/L sub pleural reticular opacities with traction bronchiectasis and honeycombing. What is your diagnosis?

A. Nonspecific interstitial pneumonia

B. Usual interstitial pneumonia

C. Acute interstitial pneumonia

D. Cryptogenic organizing pneumonia

E. Sarcoidosis

Ans: Usual interstitial Pneumonia UIP

Explanation: History and examination suggests interstitial lung disease. HRCT findings are typical of usual interstitial pneumonia. In NSIP, there is predominant ground glass appearance. AIP presents as acute respiratory distress leading to ARDS. HRCT shows ground-glass opacities and air space consolidation that can be diffuse or patchy. COP shows bronchial thickening with patchy consolidation. Sarcoidosis mostly affects upper and middle lobes.

101. A 68 year old patient with history of atrial fibrillation on treatment presented with worsening shortness of breath and dry cough for 3 months. On examination, he is comfortable on lying flat but becomes dyspnoeic on mobilising. Examination of chest showed Velcro like fixed crackles at bases. What is the cause of patient symptoms?

A. Ramipril

B. Amiodarone ✓

C. Bisoprolol

D. Digoxin

E. Warfarin

AMM

IP
5mm CT 1yr
~~3-6~~
6-8mm CT 3

Ans: Amiodarone

Explanation: History and examination shows pulmonary fibrosis which is a recognized side effect of amiodarone. Pulmonary toxicity usually manifests as an acute or subacute pneumonitis, typically with diffuse infiltrates on chest x-ray and high-resolution computed tomography. Most patients diagnosed promptly respond well to the withdrawal of amiodarone and the administration of corticosteroids, which are usually given for four to 12 months. Amiodarone-induced pulmonary fibrosis develops in 5% to 7% of patients following typical amiodarone pneumonitis. It may, however, present without an obvious antecedent event. In these cases, the pneumonitis phase is subclinical and not recognized. Patients usually have dyspnea, hypoxemia, exertional desaturation and sometimes weight loss. Diffuse crackles are heard on auscultation. Chest x-ray shows diffuse interstitial lung disease. On HRCT, there are coarse interstitial, reticular or reticulonodular opacities and traction bronchiectasis.

102. A patient with history of SOB and dry cough is diagnosed as having IPF on HRCT chest. What treatment should be given to reduce the risk of disease progression in this patient?

A. N-acetyl- cysteine

B. Warfarin

C. Co- trimaxazole

D. [✓ Pirfenidone]

E. Azathioprine

Ans: Pirfenidone

Explanation: Pirfenidone reduces risk of disease progression in IPF by 30% and has been approved for use in mild-to-moderate disease with FVC 50- 80% of predicted. It has antifibrotic, anti-inflammatory and anti oxidant effects. Immunosuppression has no role in IPF. NAC, warfarin and co- trimaxazole needs further investigation and are not recommended for treatment of IPF.

103: A 56 year old man with history of more than 20 pack year history of smoking presented with SOB and cough. XRAY shows lower lobe Pneumonia. CT chest was done which showed emphysematous changes with resolving lower lobe Pneumonia with a 7 mm nodule in the right upper lobe. What should be the next step for nodule?

A. PET CT after 2 weeks

B. PET CT after 4 weeks

C. C XRAY after 4 weeks

D. CT chest after 1 year

E. [✓ CT chest after 3 months]

5

3.

3-4

4.8

Ans. CT chest after 3 months

Explanation: Algorithm for surveillance of incidental pulmonary nodule includes;

- Nodules < 5 mm require no further surveillance
- Nodules 5-6 mm CT at 1 year
- Nodules 6-8 mm CT at 3 months
- Nodules more than 8-> malignancy risk calculation by Brock model which takes into account age, gender, family history and features of nodules. If high risk of > 10% then PET scan at 3, 9 and 24 months. If risk less than 10%, then CT at 3, 9 and 24 months.

104. A patient presents to you in OPD with a CXR which was ordered by a surgeon as a pre op workup. You identified a coin lesion on his CXR. What should be your next step?

A. CXR lateral view

B. Repeat CXR after 1 week

C. Review previous films if available

D. HRCT chest

E. Bronchoscopy with biopsy

Ans: Review previous films if available

Explanation: Coin lesion is a less than 3 cm isolated, rounded opacity on chest imaging outlined by normal lung and not associated with infiltrate, atelectasis or adenopathy. The first and most important step in the imaging evaluation is to review old imaging studies if available. Comparison with prior studies allows estimation of doubling time which is an important Marker for malignancy. Rapid progression with doubling time less than 30 days suggest infection while long term stability with doubling time greater than 465 days suggest benignity.

105. A 60 year old smoker has a chest X-RAY done for evaluation of SOB which showed a 15 mm coin lesion in right lower lobe at the periphery with lobular appearance and asymmetric calcification. What should be your next management step?

A. Bronchoscopy

[✓ B. CT guided biopsy]

C. Watchful waiting

D. Sputum cytology

E. Repeat CT after 3 months

Ans: CT guided biopsy

Explanation: The size and characteristics of coin lesion put this patient at high risk of malignancy. As the lesion is less than 2 cm and peripheral, the yield of bronchoscopy and sputum cytology will be low. Best method is transthoracic needle biopsy with CT guidance. Other option is PET scan. If the lesion is > 8mm in diameter and the pretest probability for lung cancer is high (> 60%), tissue diagnosis should be done. The probability of cancer is determined by the patient smoking history, age, and characteristics of lesion on x-ray. Age more than 60, more than 20 pack year smoking history, irregular margins , upper lobe location and spiculated or asymmetrical calcification increased the probability of the lesion being malignant.

106. A 45 year old farmer presented with sudden onset of SOB, dry cough, low grade fever and generalized malaise for last 3 hours. Patient also gave history of such episodes in the past with each episode lasting for 6-8 hours. O/E, Patient has R/R 27/min, O2 sats 90% at room air and B/L crackles and occasional rhonchi. Patient was managed and HRCT chest done which showed scattered regions of ground glass infiltrates in a mosaic pattern in upper and middle lobes of both lungs. Patient is a lifelong nonsmoker. What is your diagnosis?

A. acute asthma

B. Acute interstitial pneumonia

C. Atypical pneumonia

D. acute hypersensitivity pneumonitis

E. Allergic broncho pulmonary aspergillosis

Ans: Acute hypersensitivity pneumonitis

Explanation: History, examination and HRCT findings suggests acute hypersensitivity pneumonitis in a farmer who may be exposed to mouldy hay, grains or straw. The etiological agent is micropolyspora faeni. Acute HP presents with cough, breathlessness and wheeze after a few hours of exposure to antigen. chest examination typically reveals widespread and inspiratory crackles and squeaks. Chest X-ray typically shows air space shadowing which may be confused with pneumonia. HRCT chest is more likely to show bilateral ground glass appearance and areas of consolidation superimposed on small Centrilobar nodular opacities with an upper and middle lobe predominance. The best treatment is avoidance of the inciting agent. Prednisone for 4 weeks should be given.

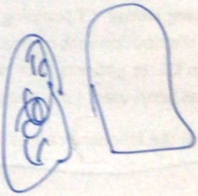
107. A 44 year gentleman admitted to you in emergency with worsening SOB for last 2 weeks. O/E, patient has B/L inspiratory crackles. CXR was done which showed patchy alveolar opacities in both lungs. Echo showed normal EF. Patient was initially managed in a private hospital with Meropenem, moxifloxacin and Vancomycin for 10 days without any improvement. HRCT done which showed areas of air space consolidation, some ground glass opacities and bronchial wall thickening and dilatation involving periphery of both lower lung zones. What is your diagnosis?

A. Mycoplasma pneumonia

B. Pneumocystis carinii pneumonia

C. Acute eosinophilic pneumonia

COP



D. Cryptogenic organizing pneumonia

E. Acute hypersensitivity pneumonitis

Ans: Cryptogenic organizing pneumonia

Explanation: History and typical HRCT findings suggests the diagnosis of COP. Cryptogenic organizing pneumonia (COP) is a disease of unknown etiology characterized on imaging by multifocal ground glass opacifications and/or consolidation. Patients present with a short history of breathlessness, non-productive cough, weight loss, malaise and fever. There is no association with smoking. The most common HRCT features include:

- Patchy consolidation with a predominantly subpleural and/or peribronchial distribution
- Small, ill-defined peribronchial or peribronchiolar nodules
- Large nodules or masses
- Bronchial wall thickening or dilatation in the abnormal lung regions
- A perilobular pattern with ill-defined linear opacities that are thicker than the thickened interlobular septa and have an arcade or polygonal appearance.

Corticosteroids is the treatment of choice and most patients recover completely.

108. A 32 year female presented with progressive SOB for 1 year. O/E, patient has dull percussion note on left base with absent breath sounds. CXR showed pleural effusion. Diagnostic thracocentesis was done which came as pleural fluid containing 450mg triglycerides. Patient has past history of spontaneous pneumothorax 2 year back for which chest tube drainage was done. HRCT done which showed multiple thin walled cysts surrounded by normal lung without any zonal predominance. What is your diagnosis?

A. Pulmonary Langerhans cell histiocytosis

B. Pneumocystis carinii Pneumonia

C. Benign cystic disease of lung

D. Pulmonary lymphangioleiomyomatosis

E. Hydatid cysts of lung

lymphe

Ans: Pulmonary lymphangioleiomyomatosis

Explanation: Lymphangioleiomyomatosis (LAM) is a rare disease of the lungs and lymphatics, which can occur sporadically or in association with tuberous sclerosis. LAM almost exclusively affects females, generally developing before the menopause. The disease is characterized by progressive pulmonary cystic change, recurrent pneumothorax, Chylous pleural collections and, in most cases, progressive respiratory failure. Diagnosis is made by a combination of clinical features and computed tomography scanning or, in cases of doubt, lung biopsy. CT scanning shows multiple thin-walled cysts scattered throughout the lung fields in an even distribution with normal intervening lung parenchyma. The cysts have thin walls that are usually visible on CT. In patients with rapidly progressive disease, hormone treatment (predominantly progesterone) has been used. Lung transplant is the definitive treatment.

109. Which one of the following causes predominant lower zone fibrosis of lung?

A. Silicosis

B. Asbestosis

C. Ankylosing spondylitis

D. Tuberculosis

E. ABPA

Ans: Asbestosis

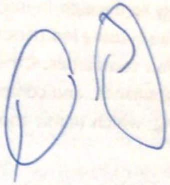
Explanation: All the common causes of pulmonary fibrosis like drugs, connective tissue diseases, pneumoconiosis and IPF causes lower zone fibrosis. Causes of upper lobe fibrosis are:

- Silicosis
- Ankylosing spondylitis
- Post TB fibrosis
- ABPA
- Sarcoidosis

- HP
- Pulmonary Langerhans cell histiocytosis
- Progressive massive fibrosis

110. A 55 year old male presents with dry cough for last 2 weeks. He had history of recurrent attacks of asthma, fever, weight loss and joint pains for last 6 months. His CBC showed HB 11.6, and TLC 12000 with polys 60%, lymphos 18% and eosinophil 22%. CXR reveals B/L fluffy shadows more in peripheral areas. What is the most likely diagnosis?

[✓ A. Eosinophilic pneumonia]



B. Sarcoidosis

C. ABPA

D. Churgg Strauss syndrome

E. Wegener granulomatosis

Ans: Eosinophilic Pneumonia

Explanation: Chronic eosinophilic pneumonia typically presents in an insidious manner with fever, weight loss, shortness of breath and productive cough with arthralgia. The classical chest X-ray appearance showed photographic negative of pulmonary edema with bilateral peripheral and predominantly upper lobe shadowing. The peripheral blood eosinophil account is almost always very high and total serum IgE are elevated. Response to steroid is dramatic.

111. Which one of the following antibiotics can cause pulmonary fibrosis?

A. Amoxicillin

B. Ciprofloxacin

[✓ C. Nitrofurantoin]

D. Azithromycin

E. Doxycycline

Ans: Nitrofurantoin

Explanation: Nitrofurantoin, isoniazid, sulfasalazine and amphotericin B can cause pulmonary fibrosis among antimicrobial agents.

112. Which one of the following occupational lung disease has similar clinical, radiographic and biopsy appearance of Sarcoidosis?

[✓ A. Silicosis] ?

B. Baggasosis

[✓ C. Berylliosis]

D. Siderosis

E. Byssinosis

Ans : Berylliosis

Explanation: Berylliosis is a granulomatous disease caused by exposure to beryllium. Berylliosis has a variable clinical course with cough, fever, night sweats, and fatigue being the most common symptoms. A definitive diagnosis of Berylliosis is based on occupational history, positive blood or bronchoalveolar lavage (BAL) beryllium lymphocyte proliferation test, and granulomatous inflammation on lung biopsy. Berylliosis is more likely to develop in individuals who work in industries that manufacture and process beryllium. Heavy beryllium-using industries include metal machine shops, electronics, defense industries, and beryllium extraction companies. Other industries include ceramic, automotive, aerospace, jewelry making, dental/alloy appliance, and computer. The key feature on histopathology is the nonnecrotizing granulomas in the lung; which mimic those seen in sarcoidosis. Radiological findings also are same as those in Sarcoidosis.

113. A cotton factory worker presented in OPD with progressive shortness of breath for 6 months. Patient reports that symptoms are worse at the start of week and gets better as the week progresses. Examination of chest showed bilateral fine crackles. PFTs results showed an obstructive picture with no reversibility. What is the probable diagnosis?

A. Chronic bronchitis

B. Emphysema

C. Hypersensitivity pneumonitis

D. Byssinosis

E. Occupational asthma

Ans: Byssinosis

Explanation: Byssinosis is more common in people who work in the textile industry where cotton fabrics are made. Classically, exposure to cotton dust during the spinning and manufacturing process causes byssinosis. In the initial stages, symptoms manifest as frequent coughing, chest tightness, dyspnea, and at times, wheezing, particularly within a few hours of exposure (or reexposure) to the workplace. Hence, patients usually report symptoms towards the beginning of their work week and thus the term Monday fever. This is in contrast to patients with occupational asthma who experience symptoms towards the end of their work week. Once exposure and lung irritation becomes persistent, patients will no longer have cyclical symptoms and progress to the chronic byssinosis state. The PFTs picture is that of COPD with obstruction and decline in FEV1 over time. But history of exposure to cotton and symptoms at the start of the week differentiate it from COPD.

114. A 65 year old male has chest x-ray done for annual screening which shows bilateral hilar lymphadenopathy with egg shell calcification with upper zone hazziness. What is the most probable cause?

A. Asbestosis

B. Berylliosis

C. Silicosis

D. Sarcoidosis

E. Tuberculosis

Ans: Silicosis

Explanation: Hilar lymphadenopathy with egg shell calcification is typical of silicosis. It also causes upper zone fibrosis. Individual with silicosis are at risk of developing TB, COPD and lung cancer.

115. A 35 year old mining laborer admitted with sudden onset of SOB for 1 week associated with dry cough and low grade fever. O/E, Patient was in respiratory distress with central cyanosis, R/R 30/ min, pulse 120/min, SaO2 75% on RA and B/L crackles throughout the lung zones. CXR done which showed B/L perihilar ground glass opacities. ABGs showed type 1 respiratory failure. HRCT was done which showed multiple small nodules with diffuse ground glass opacities with typical **crazy paving appearance**. What is the most probable diagnosis?

A. Atypical pneumonia

B. ABPA

C. Hypersensitivity pneumonitis

D. Acute silicoproteinosis

E. Pulmonary edema

Ans: Acute silicoproteinosis

Explanation: This is a case of accelerated silicosis which occurs in a patient who is a mining laborer. Intense exposure to very fine crystalline silica can cause a more acute disease- silicoproteinosis, similar to alveolar proteinosis with HRCT typical shows septal thickening with **crazy paving appearance**.

116. Which one of the following is the most common manifestation of past asbestos exposure?

A. Benign pleural plaques ✓

B. Acute pleurisy

C. Diffuse pleural thickening ✓

D. Asbestosis

E. Mesothelioma ✓

Ans: Benign pleural plaques

Explanation: Benign pleural plaques-> most common presentation of past asbestos exposure

Mesothelioma-> most serious presentation

Diffuse pleural thickening -> most common cause of restrictive lung disease

Asbestosis => most common cause of parenchymal lung disease.

117. A 40 year old patient presented with history of hemoptysis for 2 weeks. Past history includes recurrent epistaxis and nasal blockage and patient has rhinoplasty for saddle nose deformity. Chest x-ray showed thick wall cavity in right middle zone. What investigation should be done in this patient?

A. GeneXpert

[✓ B. C- ANCA]

C. P- ANCA

D. Anti GBM antibodies

E. ANA level

Ans: C- ANCA

Explanation: Upper and lower respiratory tract involvement is typical of Granulomatous with polyangitis previously known as Wagner's granulomatosis. Upper respiratory tract symptoms are:

- Chronic sinusitis is the most common initial complaint
- Rhinitis and epistaxis
- Collapse of nasal support, resulting in saddle nose deformity
- Serous otitis media and hearing loss
- Strawberry gingival hyperplasia
- Stridor, possibly leading to respiratory compromise, from tracheal or subglottic granulomatous masses

Pulmonary manifestation of the disease includes:

- Cough with hemoptysis with chest infiltrates
- Diffuse alveolar hemorrhage due to alveolar capillaritis
- It can also causes thick wall cavitating lesions.

Diagnosis is done with serological tests with C-ANCA directed against PR3 and it is the most specific for GPA. It has sensitivity and specificity more than 90%. Gold standard is lung biopsy or renal biopsy. Treatment is with cyclophosphamide with high dose Steroids.

P- ANCA is used for Churgg Strauss syndrome, anti GBM antibodies are diagnostic of Good Pasture syndrome.

118. Which one of the following is not a cause of pulmonary eosinophilia?

A. Parasites

B. Churgg Strauss syndrome

C. ABPA

[✓ D. Hypersensitivity pneumonitis]

E. Chronic eosinophilic pneumonia

Ans: Hypersensitivity pneumonitis

Explanation: HP is associated with high numbers of CD8+ T lymphocytes not eosinophils. All other are causes of pulmonary eosinophilia.

119. A 30 year old patient with history of asthma presented with history of foot drop 2 days back. Labs showed Hb of 13 with 9000 TLC and 14 % eosinophils. CXR showed fluffy shadows. What is your diagnosis?

A. ABPA

B. Churgg Strauss syndrome

C. Microscopic polyangitis

D. Hypersensitivity pneumonitis

E. Eosinophilic Pneumonia

Ans: Churgg Strauss syndrome

Explanation: Asthma, peripheral neuropathy, eosinophilia with fluffy shadows on x-ray are typical of Churgg Strauss syndrome. Treatment is steroids with cyclophosphamide.

120. Which one of the following is the most common pulmonary manifestation of SLE?

A. Pleural effusion

B. Pleurisy

C. Acute alveolitis

D. Pulmonary fibrosis

E. Pulmonary embolism

Ans: Pleurisy

Explanation: Most common pulmonary manifestation of SLE=> Pleurisy. Repeated episodes, can lead to pleural effusion

Most serious => acute alveolitis leading to pulmonary hemorrhage.

Most rare=> pulmonary fibrosis.

121. A call was sent to you from gynae for a patient who had C section 2 days back. Now patient developed low grade fever, tachycardia and tachypnea and low oxygen saturation. CXR was done which showed B/L raised hemi diaphragms. You assessed the patient who had B/L scattered crackles at bases. What is your diagnosis?

A. Pulmonary infarction

B. Pulmonary embolism

C. Atelectasis

D. Hospital acquired pneumonia

E. Myocardial infarction

Ans: Atelectasis

Explanation: History and examination showed post operative atelectasis as the most probable diagnosis. Atelectasis is a common postoperative complication in which basal alveolar collapse can lead to respiratory difficulty. It is caused when airways become obstructed by bronchial secretions. it is commonly associated with general anesthesia and more common in abdominal and thoracic surgery. It is managed with physiotherapy and can be prevented with preoperative physiotherapy and by ensuring adequate pain relief postoperatively. Appropriate analgesia is also important as this allows patients to breath normally and cough in the post-operative period keeping the distal bronchioles free from obstruction.

12. What is the gold standard test for diagnosis of idiopathic pulmonary hypertension?

A. Echocardiography ✓

B. Angiography

C. Cardiac catheterization ✓ IPS

D. PET scan

E. CT chest

IPH

Ans: Cardiac catheterization

Explanation: Cardiac catheterization is the gold standard test whereas echocardiography is the screening test for pulmonary hypertension.

123. A patient has history of cough with shortness of breath for 2 months for which chest x-ray done which showed multiple rounded cannon ball lesions. What is the most common primary tumor causing this?

A. Liver B. Colon C. Kidney D. Breast E. Prostate

Ans: Kidney cancer is the most common primary tumor causing cannon ball lesions on chest x-ray.

124. A patient is investigated for fatigue and cough for the last 3 months. X-ray of chest shows bilateral hilar lymphadenopathy. Patient is otherwise fit with no other complaints except some tender spots on both shins. All the blood tests are within normal limits. What is the most appropriate management for this patient?

A. No treatment

B. Oral prednisone

C. IV immunoglobulin

D. Ventolin inhaler

E. ATT trial

[illegible]

Ans: No treatment ✓

Explanation: This is a case of stage 1 sarcoidosis. As patient has only cough and fatigue and there is only hilar lymphadenopathy with erythema nodosum, there is no indication of steroids therapy at this stage. IVIG are also not recommended. Indication of steroids in Sarcoidosis are:

- Stage 2 or 3 disease who have progressive symptoms
- Hypercalcemia
- Eye, heart or neuro involvement

125. A 30 year old patient presented with a 10 day history of tender lumps over his shins, painful ankles with shortness of breath and dry cough. On examination there are erythematous nodules over his shins and synovitis of both ankles. What is the most useful investigation?

A. ANA level

B. Biopsy of nodules

C. CRP

D. Chest X-RAY

E. RA factor

Ans: Chest X-RAY

Explanation: the history and examination are suggestive of sarcoidosis. The disease typically affects young adult and initially presents with one or more of the following abnormalities:

- Bilateral hilar lymphadenopathy
- Pulmonary reticular opacities
- Skin joint and eye lesions.

All patients should have a chest X-ray which may show bilateral hilar lymphadenopathy.

126. Which one of the following.is the best test for diagnosis of sarcoidosis?

A. Chest X-RAY

B. Serum ACE level

C. Lymph node biopsy

D. HRCT chest

E. Serum calcium

Ans: Lymph node biopsy

Explanation: Chest X-RAY is used for screening. HRCT chest and x-ray are used for staging of disease. Lymph Nodes biopsy showing non- ceasating granuloma are gold standard. ACE levels have a sensitivity of 60% and specificity of 70% and are not reliable in the diagnosis of sarcoidosis although they may have a role in monitoring disease activity. Hypercalcemia is present in 10% of patients.

127. A 30 year old man presents with a chronic productive cough and history of recurrent chest infections since childhood. Examination showed absent apex beat on left side. he and his wife had been referred to infertility clinic as they have been trying to have a child for a few years. Investigations show low immunoglobulin levels. Sodium sweat test is normal. What is the diagnosis?

A. Bronchiectasis

B. Cystic fibrosis

C. Primary ciliary dyskinesia

D. Chediak Higashi syndrome

E. Bronchiolitis

Ans: Primary ciliary dyskinesia

Explanation: primary ciliary dyskinesia is an autosomal recessive disease characterized by abnormal ciliary motion and impaired mucociliary clearance. This leads to recurrent sinusitis, bronchiectasis, dextrocardia and infertility secondary to diminished sperm motility and defective ciliary action in the fallopian tubes. A negative sweat test is sufficient to exclude cystic fibrosis.

128. Which one of the following is a good prognostic factor in Sarcoidosis?

A. Lupus pernio

B. Insidious onset

C. Erythema nodosum

D. Hypercalcemia

E. Neurosarcoidosis

Ans: Erythema nodosum

Explanation: Presence of erythema nodosum is a good prognostic factor in Sarcoidosis. Markers for a poor prognosis include advanced chest radiography stage, extrapulmonary disease (predominantly cardiac and neurologic), and evidence of pulmonary hypertension. Presence of lupus pernio and insidious onset of disease are also poor prognostic factors.

129. The most common infection in a patient with bronchiectasis with cystic fibrosis is?

A. MRSA

B. Klebsiella

C. Pseudomonas

D. E coli

E. Streptococcus

Ans: Pseudomonas is the most common cause of infection in cystic fibrosis related bronchiectasis, heamophilus is the most common cause in non cystic fibrosis bronchiectasis.

130. Which one of the following is the most common presentation of cystic fibrosis in adults patient with cystic fibrosis?

A. Steatorrhea

B. Infertility due to absent vas deferens

C. Jaundice

D. Diabetes mellitus

E. Intestinal obstruction

Ans: Infertility due to absent vas deferens

Explanation: Steatorrhea and intestinal obstruction occurs commonly in infancy in CF. Males are sterile because of the absence of the vas deferens. Therefore, male infertility one of the most common presentation in adults with cystic fibrosis.

131. A 45 year old lorry driver is referred to you for assessment. He told you that during driving he became drowsy and at times fell asleep. He had poor night time sleep and has headache in the morning. You recommended sleep studies which showed 16 episodes of apnea with effort during one hour of sleep studies. What is your next best management for this patient?

A. BiPAP

B. CPAP

C.Uvuloplasty

D. Modafinil

E. Aminophylline

Ans: CPAP ✓

Explanation: Overnight CPAP therapy is the treatment of choice for obstructive sleep apnea. BIPAP is used for obesity hypoventilation syndrome.

132. An ABG report has been sent to you for evaluation from surgery department which was done cause of low oxygen saturation. ABGs report is as follow. pH 7.32, PaO2 55 mmhg, PaCO2 50mmhg, HCO3 28. A_a gradient was 6. What is the most probable cause of hypoxia?

A. Interstitial lung disease
B. Pulmonary embolism ✗
C. [✓ Hypoventilation]
D. COPD
E. Asthma

↓7.32
PCO_2 50-0

PO

Ans: Hypoventilation

Explanation: This patient is having type 2 respiratory failure with low oxygen and high carbon dioxide. A_a gradient measures the difference between the oxygen concentration in the alveoli and arterial system. The A-a gradient has important clinical utility as it can help narrow the differential diagnosis for hypoxemia. The normal A_a gradient is less than 10. High A-a gradients are associated with oxygen transfer / gas exchange problems. These are usually associated with alveolar membrane diseases, interstitial diseases or V/Q mismatch. Hypoxemia in the face of a normal A-a gradient implies hypoventilation with displacement of alveolar O2 by CO2 or other substance.

133. Which of the following is the most common tumor of posterior mediastinum?

A. Teratoma

A —

B. Thymoma

C. Neurogenic tumor

D. Lymphoma

E. Fibroma

Neu

Ans: Neurogenic tumor

Explanation: Teratoma, thymoma, lymphoma and fibroma are tumors of anterior mediastinum, neurogenic tumor like neurilemmoma, neurofibroma, ganglioneuroma and pheochromocytoma are tumors of posterior mediastinum.

134. Which one of the following treatment option does not improve outcomes in ARDS?

A. Decrease FiO2 to less than 60%

B. Volume controlled ventilation

C. Restrictive fluid intake and diuresis

D. Routine use of steroids in all patients ✓ V

E. Prone position ventilation

Ans: Routine use of steroids in all patients

Explanation: Routine use of corticosteroids is not recommended in ARDS. Volume control ventilation with low tidal volumes resulted in an 8.8 % absolute mortality reduction in ARDS over standard tidal volumes. Restrictive fluid intake and diuresis results in faster improvement in lung function. Prone position ventilation improves oxygenation by helping recruit atelectatic alveoli. High FiO2 leads to oxygen toxicity so efforts should be made to decrease FiO2 as soon as possible.

135. A patient with massive pulmonary embolism will present with:

A. Dyspnea

B. Bradycardia

C. Circulatory shock

D. Pulmonary edema

E. Palpitations

Ans: Circulatory shock

Explanation: A pulmonary embolus is characterized as massive when it involves both pulmonary arterie or when it results in hemodynamic compromise. Massive pulmonary embolism is defined as presentin with a systolic arterial pressure less than 90 mm Hg. Treatment is thrombolysis.

136. A patient with ARDS can be separated from CCF with?

A. CVP

B. Absent chest crepts

C. Decreased BP

D. PCWP ✓

E. Pedal edema

Ans: PCWP

Explanation: Pulmonary capillary wedge pressure is frequently used to assess left ventricular filling, represent left atrial pressure, and assess mitral valve function. It is measured by inserting a balloon-tipped, multi-lumen catheter (Swan-Ganz catheter) into a central vein, and advancing the catheter into a branch of the pulmonary artery. The balloon is then inflated, which occludes the branch of the pulmonary artery and then provides a pressure reading that is equivalent to the pressure of the left atrium. It is normal in ARDS and raised in CCF.

137. A pregnant lady presented with sudden onset of pleuritic chest pain associated with shortness of breath. Examination showed RR of 20/min with SaO2 of 90% on room air and PR of 110/min. Blood pressure is normal. What should be the initial investigation in this patient?

A. Chest X-RAY ✓

B. D-dimers

PE

C. Doppler ultrasound of legs

D. CTPA

E. V/Q scan

CTPA

Ans: Chest x-ray

Explanation: The first investigation is chest x-ray to rule out other causes of chest pain and shortness of breath. If chest x-ray normal, Doppler ultrasound of upper legs should be done to check for DVT of proximal veins. If DVT present, start anticoagulation. If Doppler is normal, then CTPA should be done.

138. A 25 year old man had RTA and died 4 days after that. He has fracture of the femur. Autopsy showed petechial hemorrhages . What is the likely cause of death?

A. Air embolism

B. Fat embolism

C. Pulmonary embolism

D. Hypovolemic shock

E. Sepsis

Ans: Fat embolism

Explanation: Fat embolism (FE) is defined by the presence of fat globules in the pulmonary microcirculation regardless of clinical significance. FES describes a characteristic pattern of clinical findings that follow an insult associated with the release of fat into the circulation. FE is most commonly associated with orthopedic trauma, with highest incidence in closed, long bone fractures of the lower extremities, particularly the femur. Nonorthopedic causes of FE are exceedingly rare and include pancreatitis, sickle cell crisis, alcoholic liver disease, bone marrow transplant, and liposuction. The classic triad of FE includes hypoxemia, neurological abnormalities, and petechiae. Pulmonary manifestations are among the most common initial signs of FE and include dyspnea, tachypnea, hypoxemia, and respiratory failure. Neurological abnormalities include focal deficits, confusion, lethargy, restlessness, and coma. The petechial rash is classically located in nondependent regions (conjunctivae, head, neck, anterior thorax, or axillae). Thrombocytopenia and unexplained anemia are common hematologic manifestations. Severe cases of FE can be complicated by disseminated intravascular coagulation, which is likely the result of excessive tissue factor expression after trauma. Supportive intensive care unit–level care is standard. Most patients are severely hypovolemic and require fluid resuscitation. Supportive correction of hypoxemia with supplemental oxygen or mechanical ventilation is often necessary while the patient recovers.

139. Which type of lung cancer is mostly associated with cavitatory lesions?

1-4

A. Small cell

B. Large cell

C. Squamous cell ✓

D. Carcinoid

E. Adenocarcinoma

Ans: Squamous cell

Explanation: SCC of lung commonly presents as thick wall cavitating lesion. They are mostly centrally located and presents with hemoptysis. Small cell typically begins centrally, infiltrate submucosally to cause narrowing of the bronchus and presents as non resolving Pneumonia. They are aggressive cancers that commonly presents with metastasis. Adenocarcinoma presents with peripheral nodules or masses. They are the most common type of lung cancer.

140: Which of the following is not a contraindication for lobectomy in patients with squamous cell carcinoma of lung?

A. Malignant pleural effusion

B. Hoarseness of voice

C. WHO functional status 3

D. FEV1 1.8 L/ MIN

E. Stage IV disease

Ans: FEV1 1.8 L / min

Explanation: Contraindication of surgery for SCC of lung includes:

- Malignant pleural effusion
- Involvement of vocal cords
- FEV1< 2 L for pneumonectomy and less than 1.5 L for lobectomy
- Functional status more than or equal to 2
- MI within 3 months
- Uncontrolled arrhythmia
- Resting PACO2>45
- DLco < 40%
- Severe pulmonary Hypertension
- Stage IV disease

INR.
AE 2.5
3.5
3.0

141. A 50 year old patient with diagnosed case of breast cancer presented with progressive shortness of breath of 1 week duration. Chest examination showed bilateral crackles. HRCT chest showed irregular interlobular septal thickening throughout the lung with preserved lung architecture. What is your diagnosis?

A. Atypical pneumonia

B. Pneumocystis carinii pneumonia

C. Lymphangitis carcinomatosis

D. Pulmonary alveolar proteinosis

E. Radiation alveolitis

Ans: Lymphangitis carcinomatosis

Explanation: Pulmonary lymphangitis carcinomatosis is a metastatic lung disease characterized by the diffuse infiltration and obstruction of the pulmonary parenchymal lymphatic system by tumour cells. Lymphangitis carcinomatosis is most commonly seen secondary to adenocarcinomas, most common breast adenocarcinoma. HRCT, is excellent at demonstrating both peripheral and central changes. Typically the appearance is that of interlobular septal thickening, most often nodular and irregular. overall lung and lobular architecture is preserved.

142. A chronic smoker is presented with complaints of confusion and constipation for 2 weeks. On examination, patient looks dehydrated and not well oriented. Labs showed high calcium of 14. Which type of lung cancer is the cause of this presentation?

A. Adenocarcinoma

B. Small cell

C. Squamous cell

D. Large cell

E. Carcinoid

Ans: Squamous cell

Explanation: Hypercalcemia is caused by squamous cell carcinoma in 10% cases due to production of parathyroid related peptides. Presence of hypercalcemia is a poor prognostic sign. Initial management of hypercalcemia is iv hydration and bisphosphonate. But in malignancy associated hypercalcemia, cinacalcet is also used.

143. A 75 year old man is admitted to hospital with hemoptysis and dyspnea. He is a lifelong smoker and a coin lesion is seen in the right middle zone on chest x Ray. He also complains of pain in his left forearm for which an x Ray was requested which showed periosteal reaction. What is the most likely cause of patient pain?

A. Hypercalcemia due to high PTHrP

B. Pathological fracture

C. Osteoarthritis

D. Hypertrophic pulmonary osteoarthropathy

E. Metastatic lung cancer to bones

③ 1.

5-6 ⑥ 1 yr.

Ans: Hypertrophic pulmonary osteoarthropathy

Explanation: Periosteal reaction in the presence of a coin lesion on chest x-ray in a smoker is typical of HPOA. It is commonly associated with squamous cell carcinoma.

Hypokalem

144. A 60 year old life long smoker presented with complaints of muscle weakness associated with polyuria for 10 days. Labs were done which showed glucose of 215, K 3.0, Ca 9.1 with HCO3 of 30. General physical examination is normal. What is your probable diagnosis?

A. Primary Cushing syndrome

B. Ectopic ACTH production

C. Diuretic abuse

D. Ectopic ADH secretion

E. Lambert Eaton syndrome

Ans: Ectopic ACTH production

lower

bone scan

normal

depression

alcohol

ARS / bone

Explanation: Cushing syndrome due to ectopic adrenocorticotropic hormone (ACTH) secretion is the most common paraneoplastic syndromes in small cell carcinoma, occurs in only 1%-5% of SCLC. Ectopic ACTH can be secreted from original cancer tissues or metastatic lesions of SCLC. These patients generally present with electrolyte disturbances rather than typical cushingoid feature. Typical cushingoid features such as moon face or buffalo hump do not usually appear because the hypercortisolism is an acute phenomenon and the patients generally do not survive long enough until morphologic changes occur. It is the reason patients with Cushing syndrome due to ectopic ACTH syndrome are easily overlooked. Generally, patients with ectopic ACTH production have high ACTH levels (>20 ng/L), cortisol levels which is not suppressed with high doses of dexamethasone (8 mg/day) and demonstrate negative responses of pituitary gland to corticotrophin-releasing hormone. It commonly presents with Hypertension, hypokalemia, metabolic alkalosis and new onset DM. Treatment is ketoconazole, spironolactone and potassium supplements.

145. A 57 year old smoker presented with hemoptysis and weight loss for 6 months and confusion for the last 2 weeks. X-ray chest showed a large mass in right upper zone. Lab showed sodium levels of 120. In context of the most likely diagnosis what would be the best treatment for him?

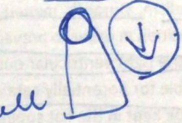
A. Lobectomy

B. Partial pneumonectomy

C. Chemotherapy

D. Radiotherapy

E. Palliation



Small cell.

Cis Clach Rito

Ans: Chemotherapy

Explanation: Hyponatremia with a lung mass in a smoker is due to small cell lung carcinoma. There is no role for surgical resection in small cell carcinoma. The treatment is chemotherapy if patient is fit for chemotherapy. Treatment regimen is cisplatin and etoposide. Radiotherapy is used in limited disease along with chemotherapy.

146. A 75 year old patient of COPD is admitted for hernia repair in surgical ward has developed retention of urine. Which drug should be stopped in this patient?

A. Theophylline

B. Salbutamol

C. Ipratropium

D. Hydrocortisone

E. Levofloxacin

Ans: Ipratropium

Explanation: Urinary retention is a rare complication of ipratropium bromide. Because all of the cases occur in elderly men with prostate hypertrophy, the drug should be used cautiously in this group of patients.

147. A 56 year old female complaints of sudden onset dyspnea and continuous cough after your house officer removed the femoral dialysis catheter. You suspect an air embolism. What should be your first next step in management?

A. Ask patient to sit upright

B. Keep the legs up of patient

C. Place patient in right lateral position

[✓ D. Place patient in left lateral position]

E. Needle aspiration from right atrium

Ans: Place patient in left lateral position

Explanation: In suspected venous air embolism, Durant's maneuver should be done immediately by placing the patient in left lateral decubitus position in order to prevent air lodging in the lungs. This serves to encourage the air bubble to move out of the right ventricular outflow tract and into the right atrium, thereby relieving the **air-lock effect** responsible for potentially catastrophic cardiopulmonary collapse. In case of arterial air embolism, patient should be kept in the flat supine position as head down position will worsen cerebral edema in arterial air embolism. Hyperbaric oxygen therapy should be started.

148. A 27 year old male is started on first line ATT for pulmonary TB which is smear positive. Patient will be labeled as treatment failure when smear is positive beyond:

A. 2 months

B. 3 months

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3 5

C. 4 months

D. 5 months

E. 6 months

Ans: 5 months

Explanation: Treatment failure of TB, which is defined as a patient who is sputum smear or sputum culture positive at 5 months or later after the initiation of anti TB treatment, is one of the threats to the control of TB. Some of the factors associated with treatment failure include poor drug compliance, primary drug-resistant TB, lack of efficacious anti-TB drugs, and presence of comorbidities such as HIV infection and diabetes mellitus.

149. Which of the following is the most common cause of atelectasis?

A. Foreign body

B. Carcinoma

C. General anesthesia

D. Pleural effusion

E. Mediastinal lymph nodes

Ans: General anesthesia

Explanation: Atelectasis is a common pulmonary complication in patients following thoracic and upper abdominal procedures. General anesthesia and surgical manipulation lead to atelectasis by causing diaphragmatic dysfunction and diminished surfactant activity. The atelectasis is typically basilar and segmental in distribution. General anesthesia is the most common cause of atelectasis overall.

150. A patient who is a diagnosed case of asthma presented with worsening of symptoms. You have managed the patient and patient responded well to treatment. You want to discharge the patient from emergency. What level of PEFR measurement is needed for successful discharge for asthma?

A. > 60%

B. > 55%

C. > 70%

D. > 75%

E. > 80%

Ans: > 75%

Explanation: For the successful discharge from emergency, PEFR should be more than 75% of the personal best.

151. At autopsy, a 60-year-old man is found to have 5 cm nodule on sectioning of the left lung. Microscopically, this area has alveoli filled with foamy macrophages. Which of the following conditions involving his lung is most likely to be responsible for this finding?

A. Mycoplasma pneumonia

B. Pulmonary embolism

3cm

5

C. Squamous cell carcinoma

5-6

D. Acute silicosis

6-8

E. Tuberculosis

Ans: Squamous cell carcinoma

Explanation: Pathologies consisting of accumulation of foamy macrophages:

- Obstructive respiratory pathology like squamous cell carcinoma
- Bronchiolitis
- Hypersensitivity pneumonitis
- Cryptogenic organizing pneumonia

- Diffuse pan bronchiolitis
- Pulmonary alveolar proteinosis
- Amiodarone toxicity

Pathologies consisting of accumulation of macrophages containing exogenous material and crystals:

- Silicosis => dirty macrophages containing carbon
- Asbestosis => ferruginous bodies
- Chronic aspiration pneumonitis => macrophages with alimentary digested particles
- Chronic eosinophilic pneumonia => macrophages with eosinophilic bodies

Pathologies consisting of accumulation of macrophages containing coarse hemosiderin pigment:

- The finding of accumulations of macrophages with intracytoplasmic deposits of coarse or chunky hemosiderin pigment is entirely characteristic of various diseases, possibly leading to chronic hemorrhage.

Pathologies consisting of accumulation of macrophages containing fine hemosiderin pigment:

- Yellow-brown, hemosiderin-laden, pigmented macrophages ("smokers' macrophages") within the lumens of respiratory bronchioles
- Primary and metastatic lung tumour

152. Which of the following parameters remain same in both obstructive and restrictive lung disease?

A. Residual volume
C. Tidal volume
B. Total lung capacity
D. Vital capacity
E. FEV1

✓ TV

Ans: Tidal volume

Explanation: Tidal volume remains normal in both obstructive and restrictive lung disease. Residual volume and total lung capacity is increased in obstructive lung disease and decrease in restrictive lung disease. FEV1 is markedly decrease in obstruction and slightly reduced in restrictive lung disease. Vital capacity is markedly reduced in restrictive lung disease.

153. A 52 year old patient with recurrent hemoptysis is diagnosed as having aspergilloma. A decision is made to do lobectomy. What test is used to check the function of each lung separately?

A. Total lung capacity
D. Vital capacity
B. DLCO
E. Arterial blood gases
C. Differential broncho spirometry

Ans: Differential broncho spirometry

Explanation: Differential broncho spirometry is used to measure the lung volume, capacity and functions of each lung separately. It is mostly used before surgical resection of lung to check the function.